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Railway Age

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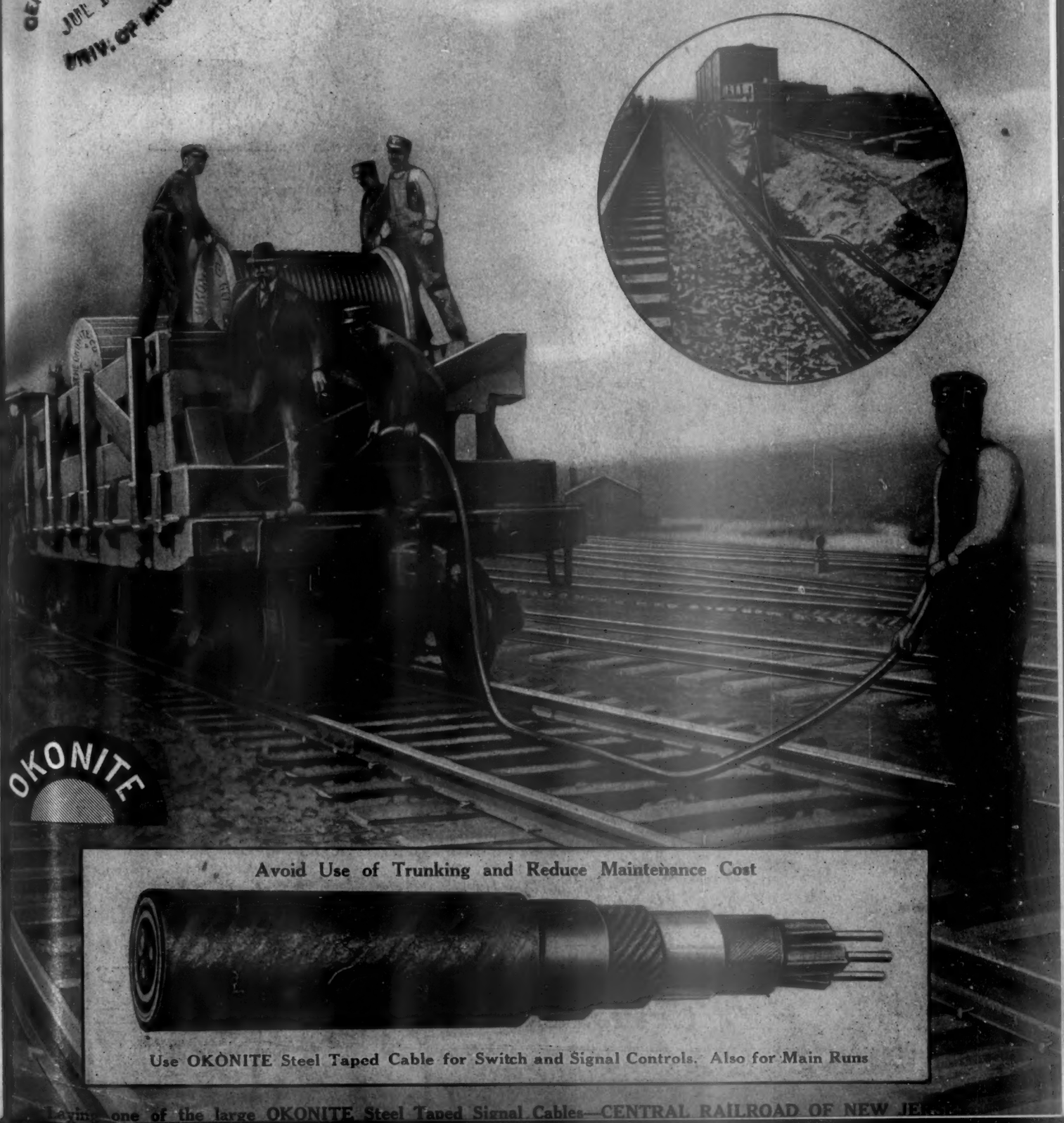
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EDITORIAL

Railway Age

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For some weeks railway and railway supply men have looked to July 1 as marking a change from the period of inactivity to that of increased action in the rehabilitation and improvement of the railway properties. That date has now arrived and passed. The wage reductions estimated to exceed one million dollars a day are now in effect and this saving is accruing to the roads. Traffic continues to increase and is far above that of last spring, although still slightly below that of two years ago and much below that of a year ago. That these conditions are having their effect is indicated by the announcement during the last week by a number of roads that they have put on considerable numbers of maintenance of way men, and on other roads that the car repair forces have been increased. The need for increased activity in both the mechanical and maintenance of way departments is pressing. The situation is especially acute with reference to cars, for the roads, particularly in the western grain producing areas, are facing the movement of an unusually heavy crop, harvesting of which is already under way. Likewise, maintenance of way work is seasonal in character and there is much of it which if not started now should not be undertaken at all this year.

July 1 Is Here

Elsewhere in this issue will be found an article describing the construction of a large bridge on the Government Railway in Alaska. As one of several formidable structures which are important features of this project it exemplifies the magnitude of the venture better than it can be expressed by a statement that the railroad is estimated to cost 50 million dollars. In view of the meager traffic which it must expect through a long period of development, the question naturally arises as to the possibility of using a pile trestle or other short span structure to cross the Susitna river, a stream with relatively shallow water, but the annual recurrence of terrific ice floes positively precluded the consideration of anything other than a clear span over the entire main river channel. Hence the expenditure of over one million dollars for this one crossing. To the engineer this project is of interest because of the problem introduced by the extreme low temperature at which it was necessary to prosecute the work. The slow setting and curing of concrete under these conditions introduced one element of anxiety, and with a view to the elimination of all other sources of uncertainty in the quality of the concrete, more than the usual pains were taken to obtain the quality of workmanship and material which under normal conditions would insure a very high quality of concrete. As an illustration it was necessary to haul the sand and gravel a distance of 200 miles to obtain the quality desired. While this work was carried on under what are obviously abnormal conditions, the precautions taken may well be carefully considered inasmuch as they serve as an object lesson in the practical application of the results of recent scientific studies of the quality of concrete.

A Large Bridge on the Alaskan Railway

As the retailer in the merchandising field has been the last to reduce his prices, so has the restaurant proprietor generally been even slower in lowering the prices of the food he serves to conform with the decreased cost to him of groceries, meat and vegetables. Such a condition is particularly noticeable in eating houses and lunch rooms at outlying railroad yards where there is no competition. It is difficult to persuade a man who is forced to eat most of his meals at such places that there has been any appreciable reduction in the cost of living. The only restaurants accessible to railroad employees at many yards and terminals have often provided food of indifferent quality and now some of them are overcharging. Many of these restaurants occupy railroad premises and are otherwise obligated to the railways for special concessions. Where such conditions exist direct pressure might well be brought to bear to prevent further violation of the railways' hospitality by the restaurant proprietors in dealing unfairly with its employees. Some of these houses, of course, are not in any way obligated to the railways but even in such cases a hint that the company might open its own restaurant or assist a competitor in doing so by leasing space or an old building to him at a nominal rental might prove effective. Other remedies may suggest themselves in various localities, but in any event some effort should be put forth to end this unfair dealing which is undeniably a source of considerable discontent.

Make Reduced Living Costs Real

It has been well said that "the heart of the roundhouse is the turn-table" and there is room for improvement in the heart action of many present day terminals. Strength is the first essential in turn-tables and advantage should be taken of the present opportunity to reinforce them, making sure that they are amply strong to support modern, heavy locomotives. Second only in importance to strength is the need for adequate, reliable power for turning the tables. In many cases replacing a small, inefficient turn-table tractor by a new unit, large enough to carry the load, will save subsequent expense in calling out inspectors, repairmen and hostlers to push the turn-table around by hand. Careful attention to proper balancing, lubrication, sanding and means for the removal of snow in localities subject to severe winter weather, will also prove time well spent and reduce future delays. There is a possibility of improvement in many roundhouses, so arranged that the opposite tracks do not line up. This condition reduces the flexibility of locomotive movement and often necessitates uncoupling tenders with resultant expense and loss of time. The design of a new terminal development

Turn-tables and Track Lay-outs

offers a fine opportunity for the study and proper location of coaling stations, ash-pits and water cranes in order that locomotives may be handled through the terminal in a direct line and with the least possible delay and back movement. Many present terminals, however, can be improved by minor alterations in track lay-outs. For example, the busiest terminal of an important railroad was greatly benefited by moving 75 ft. of track, thus making the turn-table accessible from both ends of the ash-pit. This obviated making all movements on and off the same end of the ash-pit and resulted in saving a large number of locomotive hours. In this particular case the replacing of an obsolete turn-table tractor and the later installation of a 100-ft. turntable was responsible for an important increase in terminal efficiency. Another condition to be guarded against occurs in track lay-outs where movements to and from the yard are made over a single switch point. The derailment of equipment at or near this point may cause serious delay and an emergency outlet should be provided. This can be accomplished at a comparatively small expense and may prevent tying up the entire terminal for several hours when its services are most needed.

Loss and Damage from Defective Cars

The need for a generally higher standard of freight car maintenance has frequently been commented on in these columns. Not only would the ultimate cost of maintenance be reduced, but better and more economical service would be rendered if cars were maintained at the highest instead of at the lowest practicable standard. The effects of bad car condition on the character of the service rendered is clearly evident in the classified summary of freight loss and damage expenditures issued by the Freight Claim Division of the American Railway Association. For the month of March, 1921, the latest report available, 223 carriers report a total expenditure for loss and damage of $9,580,536 of which $946,290, or 9.9 per cent, is directly attributable to defective or unfit equipment. Next to rough handling and delays, this is the cause of the largest expenditure of any of the other directly assignable causes. But the most striking evidence of the effect of poor car condition will be seen in the carload shipments of grain, flour and other mill products, and of coal and coke. Of a total expenditure for loss and damage to grain shipments of $549,488, $287,940 is directly attributable to defective or unfit equipment. Of a total expenditure of $326,767 for loss and damage to flour and other mill products, $147,800 is attributable to the same cause. Combined, the loss and damage payments for these two groups of commodities, both of which require box cars, amount to over $874,000 for the month of March, of which practically $436,000, or slightly less than 50 per cent, is chargeable to the condition of the equipment. Expenditures amounting to $403,488 were made in payment of loss and damage claims to carload shipments of coal and coke. Of this amount $187,508, or over 46 per cent, was attributable to the condition of the equipment, largely open top cars. A total expenditure for loss and damage to all commodities caused by defective or unfit equipment running at an annual rate of nearly $5 a car for all freight cars of railroad ownership is indicative of an average equipment condition which ought to be improved without delay. When it is taken into consideration that a large part of this loss and damage may be attributed to a comparatively small number of cars the saving in reduced loss and damage alone would go far toward completely justifying the retirement or rehabilitation of these cars, without considering any of the other important factors entering into the problem.

Danger of Coal Shortage Increases

WISE PEOPLE who know they must buy coal between now and next winter will buy it as soon as practicable. Foolish people who know they will have to buy coal will postpone buying it and probably pay dearly for doing so. There may be no substantial revival of business activity within the next six months. If there is not, possibly there will be no serious coal shortage. If there is any considerable increase of manufacturing and other forms of industrial activity, there will be a coal shortage, and a serious one, unless buying for business and domestic purposes soon increases very largely.

The normal increase in consumption of coal in the United States for a long time has been from 10,000,000 to 20,000,000 tons a year. The year 1914, like the year 1921, was a year of depression. Both being years of depression, the amount of coal required by the country in 1921 should be from 70,000,000 to 140,000,000 tons more than in 1914. Nevertheless, in the first six months of 1921 the amount of coal produced and shipped actually was 9,000,000 tons less than in the same months of 1914, and, in fact, less than in the first six months of any of the last eight years except 1915. It was 30,000,000 tons less in the first six months of 1921 than in 1913, 50,000,000 tons less than in 1916, 77,000,000 tons less than in 1917, 86,000,000 tons less than in 1918 and 62,000,000 tons less than in 1920. At the present rate of output the total production of 1921 would be less than 400,000,000 tons. The last year in which less than this amount of coal was consumed was 1909—twelve years ago.

There is nothing in present conditions to justify the belief that unless the production and transportation of coal speedily increase the country can avoid a coal shortage this fall and winter. As already indicated, if there should be a revival of business activity the shortage would be serious. The Interstate Commerce Commission has become so alarmed regarding the situation that Chairman Clark has made a special appeal to the railways and public utilities to increase their purchase and storage of coal. Many of the railways and public utilities are doing so, but there is a limit to the beneficial effect this will produce. Unless other business concerns and domestic consumers speedily and largely increase their purchases the country will have serious coal troubles this winter.

There is every reason why consumers that can buy and store coal to provide for future needs should do so now. The railways today have a surplus of 163,000 coal cars. In addition, they have over 130,000 coal cars in bad order, many of which could soon be put into service if there was a demand for them. This makes a total of almost 300,000 coal cars for which there is no demand now; but past experience shows that a large increase of coal traffic in the fall and winter would soon wipe out this car surplusage and create a shortage.

It is as certain as any future thing can be that there will be no substantial reductions in freight rates on coal this year. The railroads themselves are paying for coal prices per ton which, according to the latest statistics available, average $4.40 per ton, or about 180 per cent higher than in 1916. The advances in rates on coal have averaged nowhere near this much, and the railways cannot afford to reduce the rates on coal when they are having to pay such high prices for it. Furthermore, there seems no prospect of any considerable reductions in prices of coal, because the mine operators are still paying the mine workers the highest wages in history and, under their contracts will have to continue to do so until April 1, 1922.

With the prospect of a serious coal shortage looming up, and with no apparent prospect of reductions in prices, it is plain that in their own self-interest business concerns and domestic consumers should begin buying at once the supplies that they will need later. If they do not do so, and later

find that they cannot get the coal they need, they will have nobody to blame but themselves.

All past warnings regarding the increasing danger of coal troubles next fall and winter have been disregarded by the public. It is to be hoped that the warnings now being given will receive more attention.

Will the Labor Board Enforce the Closed Shop?

THE HEARINGS before the Railroad Labor Board last week regarding the differences which have arisen between the management of the Pennsylvania and the shop crafts' unions involve principles of the utmost importance. One great question involved was whether the individual railway management may negotiate regarding rules and working conditions with its *employees,* both union and non-union, or must deal with the labor unions exclusively. Another great question involved was whether rules and working conditions are to be so formulated as to reward individual employees regardless of the work they do, and thereby promote inefficiency, or so as to reward individual employees in proportion to the work that they do and thereby stimulate efficiency, in the interest of the employees, the railroad and the public. Another great question involved was whether the Labor Board is to usurp the functions of the management of each individual railroad and its employees in determining rules and working conditions, or to allow this function to be exercised by the individual railroad and its employees.

The provisions of the Transportaion Act regarding the settlement of labor controversies are so plain in their letter as to make it very difficult to understand how any serious doubt can be raised as to their spirit and intention. They specifically require all disputes between carriers and their employees "to be considered and, if possible, decided in conference between representatives designated and authorized so to confer by the carriers or the employees, or subordinate officials thereof, directly interested in the dispute." There is not a word to indicate that the carriers must deal exclusively with representatives of the unions.

The labor leaders are trying to get the Board to so interpret the law as to compel each railway management to deal solely with officers of the unions if the unions include a majority of the members of any particular class of employees on the individual railway. Suppose, however, that a union includes 60 per cent of the employees of any particular class, and that the remaining 40 per cent of the employees and one-third of the union employees, making 60 per cent of all, elect representatives to deal with the management. In such a case these representatives will not represent the unions, but they will represent a majority of the employees. Obviously, to try in such a case to force the management to deal solely with representatives of the unions would be to deny it the right to deal with representatives chosen by a majority of its employees, which would be directly contrary to the spirit of the law. The practical effect of forcing each railway to deal only with representatives of the union, if the union happens to include in its membership a majority of the employees of any particular class, would be to force upon the railroads the closed shop for that particular class of employees—a thing plainly not contemplated by the Transportation Act.

Negotiation by a railway solely with the representatives of the unions means, as long as the unions persist in their present policies, either the exclusive application of union principles in fixing rules and working conditions, or the making of all rules and working conditions by the Labor Board.

The application exclusively of union principles means the continuance of the abolition of piece work, of the payment of large amounts of so-called "wages" for work not done, and, in many cases, excessive payments for work that is done. The shop crafts' unions especially have stood throughout for continuance on every railroad, practically unchanged, of the rules and working conditions provided in the national agreements. That means continuance of the gross waste and inefficiency which have prevailed ever since the national agreement with the shops crafts was made.

Since it is obvious that the railroads never will voluntarily agree to the principles and methods for which the shop crafts' unions stand, recognition by the Labor Board of the principle that the railways must deal solely with the unions, would mean that rules and working conditions on practically every railway must be made by the Labor Board itself. This, however, would mean that the Labor Board would become the manager of all the railways of the United States. in so far as management relates to labor matters; and they are the most important matters to which it does relate. The railways were returned to private operation under the provisions of the Transportation Act for the express purpose of abolishing nationalized and centralized management in all its forms. Therefore, for the Labor Board to constitute itself the manager of all the railroads with respect to labor matters would be to defeat the very intent and purpose of the law which created it.

The untenable position in which the Labor Board now finds itself with respect to the subject of rules and working conditions is due to an almost unbroken series of mistakes it has made in dealing with that subject. The law plainly contemplated that it should not take jurisdiction of any matter whatever until there had been conferences between the carriers and their employees regarding it which had resulted in a controversy that threatened to interrupt transportation. The national agreements made by the Railroad Administration with the employees expressly provided for their own termination when government control should terminate. The railways continued them in effect until September 1, 1920, because the law required that until that date no changes should be made in wages or working conditions which would reduce the compensation of any employee. Both prior and subsequent to that date rules and working conditions were a proper subject for conference and negotiation between the railways and their employees. They were not, properly or legally, a subject for consideration by the Labor Board until after such conferences had been held and controversies had arisen which might result in a substantial interruption of transportation. The Labor Board, however, disregarding the plain language and intent of the law, assumed jurisdiction of rules and working conditions in its decision in the wage case of last summer, and ordered the national agreements continued in effect until it could hold hearings regarding them and reach a decision. Having issued an order in April that they should be abrogated, effective July 1, it issued another order late in June ordering them continued indefinitely.

Meantime, the Pennsylvania and its employees had reached an agreement regarding rules and working conditions for its large Altoona shops, this agreement, however, being reached with the elected representatives of its employees there, and not with representatives of the labor unions. If this agreement had been reached before the Labor Board took jurisdiction of the subject of rules and working conditions it would have been difficult to raise any serious question as to its conformity to the letter and spirit of the law. The Labor Board having, however, taken jurisdiction of the subject of rules and working conditions and made certain rulings, and interpretations of rulings, regarding it, the labor unions now come in and demand that the Labor Board shall require the agreement between the Pennsylvania and its employees to be set aside on the ground that it is contrary to the rulings of the Board. But if the Board's rulings are

not in conformity with the law there is no good reason why the railroad should regard them.

Up to the present time the Labor Board has pursued a policy which has seemed to be dictated mainly not by the provisions of the law which created it, but by fear of what the labor unions would do if it rendered any decision which displeased them. The result is that almost a year and a half after the return of the railways to private operation they and the public are still bearing the burden of the iniquitous standardized wages and rules and working conditions which were imposed under government control. The railroads were returned to private operation for the purpose, among others, of relieving them and the public of these things, not of perpetuating them. The Labor Board was created to carry out the purposes of the law, and not to defeat them, but its policy, or want of policy, in dealing with the subject of national agreements has thus far defeated those purposes.

Government Versus Private Management

WE PUBLISH ELSEWHERE in this issue an article by J. L. Payne analyzing in some detail the operating results of the Canadian government lines and the privately owned and operated Canadian Pacific in the year 1919. We leave the reader to draw his own conclusion from the statistics presented by Mr. Payne, and his comments on them. We call attention to the fact, however, that if from the data presented by Mr. Payne the reader draws the conclusion that the government lines are less efficiently operated than the Canadian Pacific, this does not necessarily reflect upon the energy or ability of the official personnel of the government lines.

The railways of the United States were operated under government control mainly by the same men who operated them under private management in 1917, and who are operating them under private management now. The results obtained by these men under private and government control have been, however, widely different. This difference in results has been due almost entirely to differences in the principles that had to be applied, and the methods that had to be used, under government management, on the one hand, and private management, on the other.

There are many things the officers of a railway system which is privately owned and managed can and will do, that the officers of a railway system that is government owned and managed cannot and will not do, because government and private management necessarily are subjected to different influences.

For example, the officers of a government railway system cannot, as a practical matter, meet a reduction of traffic with the same large reductions in the number of men employed, and in other expenditures, as the officers of a private railway system can. The business of the railways of the United States declined under government operation following the armistice almost as much as it did under private operation in the latter part of 1920 and early part of 1921. Under government operation, however, the reduction made in the number of employees was comparatively small, while under private operation, between August, 1920, and March, 1921, the number of employees of the railways of the United States was reduced 605,000, or almost 30 per cent.

The successful operation of a railway system demands the application of the same principles and methods that are used in the successful management of any other kind of business, and neither in Canada, the United States, nor any other country—especially in one having a democratic government—can accepted business methods be used to the fullest extent in the operation of a government railway. They may be used to a greater or less degree, depending on circumstances, and the present management of the government railways of Canada undoubtedly has used them to as great an extent as the conditions would permit. But government operation by its very nature necessarily is subjected to influences and motives which do not originate with the management, and which necessarily have an important effect on the operating results.

Labor Cannot Eat Its Cake and Have It

THE DRASTIC MEASURES the railroads have been forced to adopt to avoid financial disaster are illustrated by the fact that 604,756 railway employees were contributed to the army of unemployed between August, 1920, and March, 1921. The establishment of new records in August, 1920, for the amount of transportation service rendered entailed the employment of 2,197,824 persons, according to the statistics of the Interstate Commerce Commission. Decreased traffic and excessive operating expenses, with a consequent low net return, despite higher freight and passenger rates, compelled the railroads to reduce the total number of their employees during the succeeding seven months to 1,593,068, a decrease of 27.5 per cent. Despite these drastic reductions, receivership was still "just around the corner" for many carriers.

Comparisons of the number of employees of various classes in August, 1920, and in March, 1921, bring to light interesting facts and indicate to some extent the causes and effects of this curtailment. The heaviest cuts were made in the maintenance of way and maintenance of equipment departments. Almost half—49.1 per cent—of the 456,179 foremen, masons, bricklayers, structural iron workers, section men and employees in construction gangs and on work trains were laid off in this seven-month period. Approximately 191,900 section men, or 52.5 per cent of the number in service in August, 1920, were not included in the March, 1921, pay roll. Almost 71 per cent of the men in construction gangs and on work trains were cut from the pay roll. Of the 1,274 masons and bricklayers employed in August, 1920, only 45.3 per cent, or 577, were employed in March, 1921. Similarly, the number of structural iron workers decreased from 900 in August, 1920, to 556 in March, 1921, a reduction of 38.3 per cent.

In the maintenance of equipment department the August, 1920, pay roll included 347,628 machinists, boilermakers, blacksmiths, carpenters, painters, upholsterers, electricians, air brake men, car inspectors, car repairers and other skilled laborers. The March, 1921, pay roll included but 239,446 employees of these various classes, a decrease of approximately 31.1 per cent.

Comparable reductions, of course, could not be made in freight, passenger, yard, terminal and station service because of the necessity for continuous operation regardless of financial difficulties. In freight train service, the number of engineers, firemen, conductors, brakemen and flagmen was reduced from 169,983 in August, 1920, to 135,534 in March, 1921, or 20.3 per cent. Employees in similar capacities in passenger service were reduced from a total of 59,965 in August to 57,159 in March, or 4.7 per cent. Employees in station, yard and terminal services, such as those classed as yardmasters, yardmasters' assistants, engineers, firemen, conductors, brakemen, switch tenders, other yard employees, hostlers, enginehouse men and station service employees, numbered 364,093 in August. In March they numbered 281,884, a decrease of 82,173, or 22.6 per cent.

The reduction in clerks during this period was comparatively small because of the great amount of necessary accounting and statistical work. Of the 261,211 clerks

employed in August, 33,830, or 13 per cent, had been laid off by March.

While this large reduction of employees undoubtedly was partly due to seasonal causes and much more largely to the slump in traffic, it is unquestionably true that many of the railway employees who are not now in service owe their unemployment to the policy followed by their union leaders. These leaders must have known that the carriers' excessive operating expenses would have to be reduced. They knew, too, that the cost of living was declining and that labor in outside industries was contributing towards necessary business readjustment by accepting lower wages. They knew that readjustment of the railway pay roll was inevitable. Nevertheless, they resisted every effort to bring operating expenses, of which the pay roll constitutes about 65 per cent, into a proper relation with operating revenues through reductions in basic wages and reform of rules and working conditions. The result was that the carriers were compelled to make reductions in forces so large that they were not good for either the railroads, the employees, or the public.

For example, in August, 1920, the percentage of unserviceable freight cars was 7.1 per cent; in March it was 11.1 per cent; the increase being mainly due to the fact that railroad shop forces had to be reduced 31.1 per cent to save many railroads from ruin. Railroad labor's representatives blocked every other avenue of relief. Again, there is still a large amount of deferred maintenance of way work which was left over from federal control. The exceptionally mild winter and spring would have enabled the railroads to accomplish much towards putting the physical properties in shape, but the refusal of the labor leaders to act in the best interests of *all* their clientele made it necessary to reduce the maintenance of way forces by almost one-half.

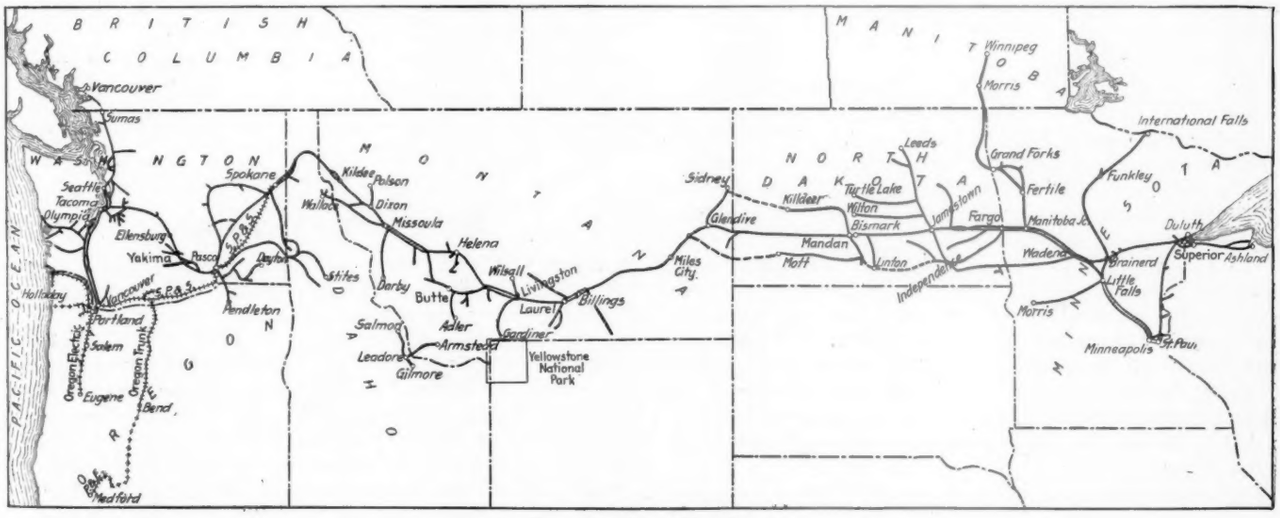
There should be a lesson in these unfortunate developments for both labor leader and employee. Some of the men who were laid off during this seven months' period are again in service; many more will be, as operating revenues and expenses approach a proper relationship. Then it will be interesting to find how many have learned by experience that they "cannot eat their cake and have it"—that they cannot force the railways to pay excessive amounts to individual employees without at the same time forcing them unduly to reduce the number of men employed. The surest and shortest road to extensive unemployment in the railroad and in every other industry is successful insistence by the labor unions upon wages and working conditions which impose upon the industry a burden greater than it is able to carry.

Northern Pacific

THE FACT that the directors of the Northern Pacific voted two weeks ago to declare the regular quarterly dividend of 1¾ per cent, despite the business depression and the low earnings of the railways, is a clear indication of the essential financial strength of the company. Its financial standing was also emphasized by the success of the Hill lines in floating the recent issue of bonds to refund the Burlington joint 4's.

The Northern Pacific was very hard hit by the increase of operating expenses which characterized the period of the war. Up to the present it has not been able to reduce this level of expenses materially, combined with which it is suffering severely from the depression which has been especially acute in the Pacific Northwest. The road's standard return was set at $30,057,760. In 1918, despite the fact that it handled the largest business in its history, it did not earn its standard return, the net railway operating income for the year being $28,209,373. In 1919, the net railway operating income was $18,379,363; in 1920 but $8,636,686. In the first four months of 1921, which is as far as the figures are at present available, the operations of the road resulted in a deficit of $818,315 as compared with a net railway operating income in the first four months of 1920 of $5,159,326.

Referring now to the corporate income, including the standard return while the railroad was under federal control and the guaranty for the six months from March 1 to August 31, 1920, it will be noted that the income available for dividends in 1920 was $19,094,183. In 1919 it was $22,836,737. The dividend appropriations in both years totaled $17,360,000.



The Northern Pacific

The story of the Northern Pacific's operating results over the past few years is the same story that has been referred to so many times in these columns; namely, that there was a considerable increase in total operating revenues, a still greater increase in total operating expenses and the resulting decline in net. The annual report of the road brings out these facts clearly and they are also shown in the form of tables in this review. Table I is a resumé of the earnings, expenses, traffic handled, etc. It will be noted that in 1916 the total freight revenue was $59,543,090, the total operating revenue $80,281,343, and the net operating revenue $37,049,065. In 1920 the freight revenue had increased to $81,090,390 and the total operating revenues to $113,084,408. The operating expenses, however, had increased to $100,983,874 and the net had decreased to one-third of what it was in 1916 and was $12,100,534. The progressive in-

crease in the operating ratio from 53.85 in 1916 to 89.30 in 1920 is especially noticeable.

The Northern Pacific's busiest year was in 1918, when it carried 24,150,782 revenue tons of freight. The total ton-miles were 9,589,272,892. Further than that, in 1918 the railroad secured an average haul of 397 miles. The amount of freight presented for transportation enabled it to haul an average train load of 737 tons and to secure an average car load of 25.4. In 1920 its average haul was but 334.9 miles; its average train load was 659.66 and the average car load but 24.2. The increase in operating expenses was due mainly to increased wages and the figures are given in such striking fashion that it would not be proper to omit them. They are as follows:

Total payroll for year ending June 30, 1915	$24,486,852
Total payroll for year ending December 31, 1916	28,204,669
Total payroll for year ending December 31, 1917	35,877,879
Total payroll for year ending December 31, 1918	49,632,127
Total payroll for year ending December 31, 1919	52,605,396
Total payroll for year ending December 31, 1920	66,503,794

From 1916 to 1920 there was an increase of nearly 50 per cent in the cost of locomotive fuel. The average cost per ton in 1916 was $2.57. In 1920 it was $4.67. The fact is further developed that during 1920 the road was unable to secure sufficient quantities of eastern coal. Eastern coal brought the highest prices ever paid, ranging from $8 to $9 per ton delivered on the docks at the head of the lakes. During the year locomotives were supplied with a considerable quantity of Illinois coal. The figures relating to fuel are given as follows:

Year ended December 31	Coal used by locomotives tons	Average cost per ton	Total cost
1916	2,520,215	$2.566	$6,466,872
1917	2,745,034	3.030	8,317,453
1918	2,718,558	3.8884	10,570,841
1919	2,460,428	4.1008	10,089,723
1920	2,625,493	4.6740	12,271,554

Another noteworthy handicap with which the Northern Pacific has to contend is that of increasing taxes. The taxes paid in 1920 totaled $10,108,868 as compared with $6,910,-728 in 1917, an increase of 46 per cent. The increase was made up entirely of state taxes.

The foregoing does not have quite that optimistic sound which might be wished. It merely shows, however, that the Northern Pacific, while a fine property, has been subjected more severely than most roads to the unfavorable influences from which all have suffered within recent years. The Northern Pacific is fortunate in being able, because of its efficient management, to have put itself in a financial position so that it can continue its dividends in a time of stress such as the present.

Furthermore, the year 1920 for the Northern Pacific did show marked progress. During that year the road placed the total tractive effort 49,094,650, and the average tractive effort 34,918. Of the locomotives in service at the end of 1919, 509, or 36 per cent, had superheaters; at the end of 1920, 600, or 41.49 per cent, had superheaters.

The Northern Pacific is at present confronted with the lack of traffic resulting from the depression, which, as above noted, has been particularly severe in the Northwest. The Northern Pacific is a large carrier of lumber. A story is told of a prominent Pacific coast lumber man who recently came east for the purpose, he said, "of getting out of the gloom." His remark is a bit facetious, it is true, but it emphasizes the nature of the conditions on the Pacific Coast. This and other factors which are corrolary to a depression in a territory so widely extended as that served by the Northern Pacific, are further indicated by the fact that in the first four months of 1920 the road's freight revenues were but $17,867,644 as compared with $24,540,702 in the first four months of 1920. Like most railways, its great needs are an increase of its traffic, and a reduction of its labor, material and fuel costs.

The figures for operation in 1920 as compared with 1919 are as follows:

	1920	1919
Mileage operated	$6,653	$6,592
Freight revenue	81,090,390	72,934,723
Passenger revenue	21,143,708	20,331,317
Total operating revenue	113,084,408	100,739,354
Maintenance of way expenses	21,012,798	16,223,655
Maintenance of equipment	25,593,923	19,809,119
Traffic expenses	1,142,318	765,310
Transportation expenses	48,439,001	38,274,463
General	3,145,012	2,537,657
Total operating expenses	100,983,874	78,672,509
Net from railway operations	12,100,534	22,066,845
Taxes	10,108,686	9,000,737
Operating income	1,973,378	13,042,167

The corporate income account is as follows:

Gross income	32,390,893	35,644,402
Interest on funded debt	12,134,438	12,117,483
Net deductions from gross income	13,296,709	12,807,665
Net income	19,094,183	22,836,737
Dividends	17,360,000	17,360,000
Income balance	1,734,183	5,476,737

New York Central

AMONG THE MULTITUDE of questions that received more than ordinary attention during the war, one that resulted in no inconsiderable discussion among transportation men was the importance of the port of New York. That port, being the country's largest port, and with one exception the port nearest the scene of the conflict in Europe, was the key to the export and supply situation. As a result it was congested and even with its enormous facilities proved at times unable to handle to best advantage the great stores of war supplies which were loaded on ships at its many miles of docks. For a time there was an agitation, if such it might

TABLE I—NORTHERN PACIFIC OPERATING RESULTS

Year	Freight revenue	Total operating revenues	Operating expenses	Net operating revenue	Operating ratio	Revenue tons	Revenue ton miles	Average haul	Revenue train load	Rev. car load
1920	$81,090,390	$113,084,408	$100,983,874	$12,100,534	89.30	23,448,182	7,852,847,753	334.90	659.66	24.2
1919	72,934,723	100,739,354	78,672,509	22,066,845	78.10	21,389,131	7,589,036,420	354.81	660.85	24
1918	78,534,344	102,908,259	71,516,302	31,391,957	69.62	24,150,782	9,589,272,892	397.06	737.14	25.40
1917	65,258,995	88,225,726	53,297,861	34,927,865	60.41	22,842,151	8,812,675,163	385.81	662.42	23.17
1916	59,543,090	80,281,343	43,232,278	37,049,065	53.85	21,893,980	7,721,585,793	352.68	636.72	21.21
1912–13	52,270,686	72,676,139	44,673,298	28,002,841	....	21,285,527	6,232,168,637	292.8	541.62	19.74

orders for 20 Pacific, 25 Mikado, 20 Eight-wheel switching and six heavy Mallet locomotives, the purchase of which, together with that of certain freight cars and various expenditures for additions and betterments to way and structures was financed with the assistance of a loan of $6,000,-000 from the government's revolving fund. The six Mallet and four switching locomotives had not been delivered up to the end of the year. On December 31, the road owned 1,446 locomotives, the total tractive effort being 52,136,870 and the average tractive effort per locomotive, 36,056 lb. At the end of 1919 the number of locomotives was 1,406,

be called, which aimed to convince shippers that New York was not the only port on the Atlantic seaboard. The port of New York, nevertheless, finally managed to solve its several problems; it continues to be America's leading seaport and is expanding its facilities at present in greater degree than is the case at most of its competitor ports. The agitation to induce shippers to use other ports has in a large measure ceased. The other export centers have their functions and will continue to derive compensating advantages therefrom. New York will continue to be the real Atlantic seaboard shipping center and will continue to retain the advantages

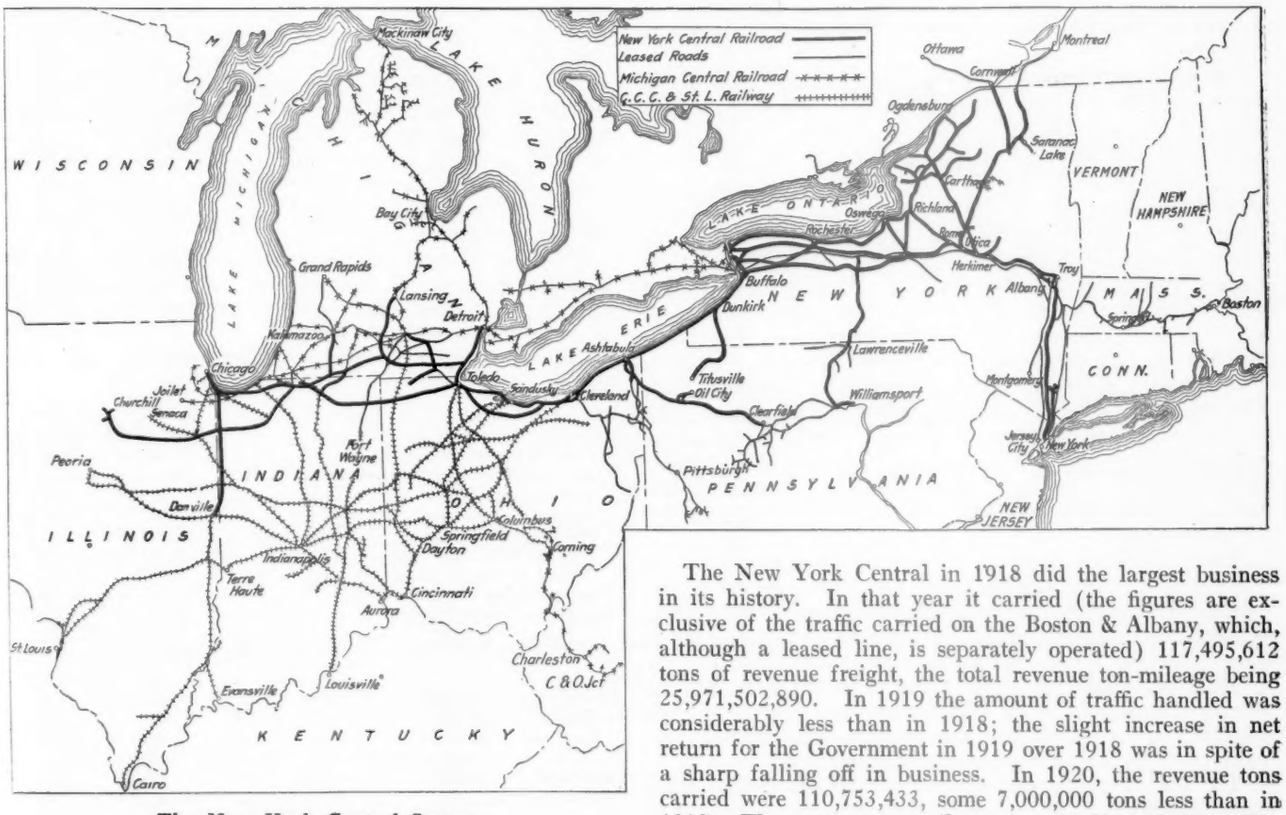
due to its great facilities and to the fact that as predominantly the largest port, it has the greatest number of ships and therefore the greatest amount of available cargo space.

Because of its being one of the more important of the lines serving New York and because of its strategic position and operating capacity in general, the New York Central was called upon during the war and the federal control period to serve in a measure as the backbone of the transportation lines in the eastern district. This statement is made with all due respect to the other lines serving the Atlantic seaboard, some of which, notably the Lackawanna, rendered a service, differing from that rendered by the New York Central in amount rather than in character. The New York Central was, because of the situation, called upon to do almost the impossible. The development of its plant and more especially the progressive policy evidenced in its large purchases of equipment just prior to the federal control period, enabled it to come through the difficult period in quite creditable shape.

The impression should not be secured, however, that the New York Central has not suffered from the handicaps resulting from the high wage scales, the national agreements and in general the high costs of operation characteristic of the federal control period and of the year 1920. The New York Central had a standard return for the period of federal control of $55,802,631, although in 1918 this was increased to $56,324,508 and in 1919 to $57,690,588 through additional compensation on account of completed additions and betterments. In 1918 the net railway operating income was $48,410,217; in 1919, it was $49,704,631, which figures, although they did not equal the standard return, were not so unfavorable as compared with those of the majority of the roads.

In 1920, however, including the two months of federal control, the six months of the guaranty period and four months of operation on its own, the New York Central had a net railway operating income, as reported in the December monthly statement to the Interstate Commerce Commission, of but $3,557,579. The road, in short, was able to meet in fair measure the high costs of operation characteristic of the federal control period; it was not able to meet similarly the high wage scales embodied in Decision No. 2 of the Railroad Labor Board, nor the other conditions of the railway situation evidenced in general in 1920.

As far as the present is concerned, the New York Central is not now doing as much business as it did in the early part of 1920. Even with this smaller traffic it is, however, because of the increased rates, succeeding in keeping its gross ahead of last year's. In the first four months of 1920 its gross earnings have been $63,321,465 as compared with $60,978,831 in the first four months of 1920. Its net railway operating income for the first four months of 1921 was $7,087,063 as compared with $5,928,833 in the same period of 1920. The New York Central should succeed in coming through 1921 in much better shape from the standpoint of net earnings than it did in 1920, but it is not yet apparent that it will succeed in reaching for the year the net which it earned for the Government during the federal control period.



The New York Central System

The New York Central in 1918 did the largest business in its history. In that year it carried (the figures are exclusive of the traffic carried on the Boston & Albany, which, although a leased line, is separately operated) 117,495,612 tons of revenue freight, the total revenue ton-mileage being 25,971,502,890. In 1919 the amount of traffic handled was considerably less than in 1918; the slight increase in net return for the Government in 1919 over 1918 was in spite of a sharp falling off in business. In 1920, the revenue tons carried were 110,753,433, some 7,000,000 tons less than in 1918. The revenue ton-mileage was 24,548,839,472. The average haul in 1920 was 200 miles.

The New York Central has creditable statistics of operating efficiency. In 1920 it had an average revenue trainload of no less than 895. Its average carload was 28.45 tons. Its daily car movement was 23 and its net ton-miles daily per car were 432. The New York Central carries a considerable tonnage of coal, bituminous coal in 1920 making up 36,616,030 tons and anthracite 8,583,211 tons of a total revenue tonnage of 110,753,433. This should assist it in securing a heavy trainload, but in view of the great amount of fast freight and merchandise traffic, the average of 895 mentioned above seems especially noteworthy.

It is hardly necessary to show the reasons for the sharp decline in net earnings in 1920 which took place in spite of the heavy traffic carried in that year. However, the follow-

ing facts quoted from the annual report for 1920 may be of interest:

The abolition of piece work in the shops of the company has cost millions of dollars. Under the piece work system and other shop conditions existing in 1915, 2,799 men turned out 73,072,000 effective miles of equipment. In 1920, piece work having been abolished and classification and working conditions of employees having been changed and employees being restricted to one kind of work for each class of employment, practically the same effective miles of equipment were turned out, namely 74,655,000, but 4,521 men were required. The cost of the work in 1915 was $2,903,700 and $8,352,000 in 1920, an increase of $5,448,300. This is to say, there was an increase in men of 61.5 per cent, an increase in money of 187 per cent and an increase in effective mileage output of but 2 per cent.

The increase in payrolls since 1917 for the New York Central, excluding those of the Boston & Albany Railroad, is indicated by the following:

Date	Number	Monthly payroll	Average monthly pay per emplcyee
December 31, 1917	94,386	$8,409,722	$89.10
February 29, 1920	103,572	13,511,078	130.45
December 31, 1920	96,418	15,892,121	164.83

The total amount of payroll charged to operating expense in 1917 was $83,053,280, while for 1920 it was $177,289,640. The entire operating expenses in 1917 were $153,597,905, or $23,691,734 less than the 1920 payroll included in operating expense.

Mention was made above of the progressive policy which the New York Central has followed in recent years in the matter of purchase of equipment. The large purchases made prior to federal control were one of the most important features in enabling the New York Central to meet the great demands upon it late in 1917, in 1918 and again in 1920. The company apparently intends to be similarly prepared for future eventualities. In 1920 it placed orders for no less than 196 locomotives, 265 passenger cars and 9,244 freight cars, of which about one-third was received before the close of the year. The total cost of this equipment was about $48,318,300, one-quarter of which was financed through a loan from the government's revolving fund. The New York Central itself took 95 locomotives, 160 passenger cars and 4,194 freight cars, the remainder being sublet to the following affiliated companies: Michigan Central, Big Four, Pittsburgh & Lake Erie and Toledo & Ohio Central. Notes were given by these companies to cover the equipment assigned to them.

The New York Central's total borrowings from the revolving fund were $26,775,000 in two loans, one of which, totaling $14,850,000, covered equipment and the other, $11,925,000, covered additions and betterments to way and structures. Of the former loan, the New York Central itself received $6,976,000 and of the latter $5,500,000; the remainder going to various of the other companies in the New York Central system, each of which gave notes to the parent company covering the amounts which they received.

The New York Central is also carrying out various other improvements to its properties other than those represented in the acquirement of new equipment. These projects include engine terminal improvements; extension of the car repair shops at East Buffalo, N. Y.; work in connection with the New York State Barge Canal, notably in 1920 at Tonawanda, N. Y.; a new line and traffic connection with the Toronto, Hamilton & Buffalo and Canadian Pacific at the Niagara frontier; the new proposed passenger terminal at Cleveland, etc. Another project that should prove of special importance to the road is now being carried out by the Cunard Line on land leased from the New York Central at Weehawken, N. J. The project calls for eight large steamship piers and accompanying facilities and represents one of the largest port developments now under way in the country. The net increase in property investments in 1920, which is another indication of the amount of work done, was $11,422,340, of which $3,349,574 represented equipment received less that retired during the year.

The New York Central's corporate income account for 1920 showed a surplus after the payment of the 5 per cent dividends amounting to $1,250,256 as compared with $7,433,063 in 1919. This reduction was due primarily to a decrease of $8,246,181 in return from railroad operations and to an increase of $1,509,689 in interest on funded debt. Rent for leased roads showed an increase of $1,077,449 and interest on unfunded debt, $788,603. This matter of increase in interest on funded debt is of rather serious importance to the New York Central, particularly inasmuch as it represents interest on expenditures which must be made if the property is to continue to be able to meet the heavy demands upon it for the efficient movement of traffic.

The funded debt as of December 31, 1919, was $671,654,782; on December 31, 1920, this had been increased to $748,354,477. The increases during the year included the $25,000,000 ten-year collateral trust bonds sold about a year ago; equipment trust notes totaling $13,674,000, covering the standard equipment allocated by the Railroad Administration; $17,297,510 equipment trust notes covering that part of the 1920 equipment purchases not delivered to affiliated lines; and two items of notes, $11,925,000 and $14,850,000, given the secretary of the treasury and covering the two loans from the revolving fund (something over half the value of these notes is balanced by notes given the New York Central by the affiliated companies, covering the advances made to them). The interest charges on this increased indebtedness will no doubt prove something of a burden in the future. How much of a burden will depend upon the amount of progress that is made in working out the solution of the railroad problem.

The New York Central is an efficiently operated property; it would appear to be fully able to realize on any improvement in the general situation, and that such improvement is to occur now seems quite certain.

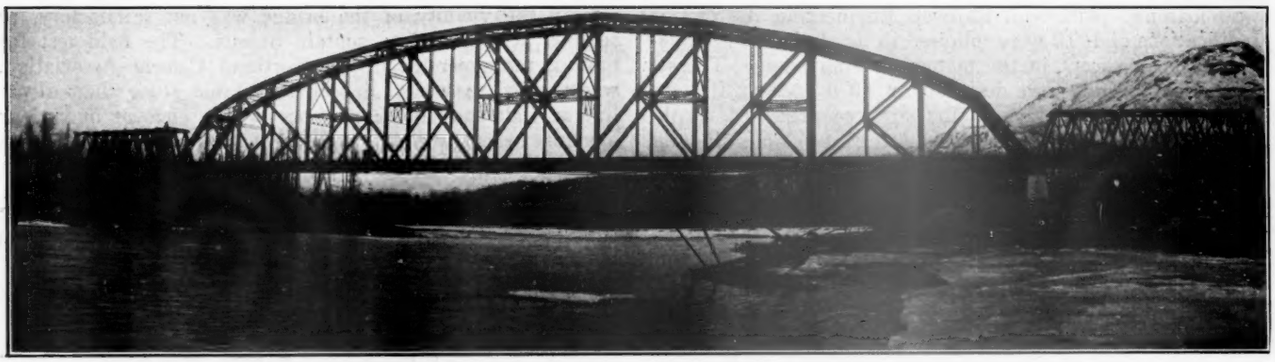
The operating results in 1920 as compared with 1919 follow:

Mileage operated:	1920	1919
Freight revenue	$209,792,208	$173,926,744
Passenger revenue	84,601,640	75,652,262
Total operating revenue	338,624,456	283,659,331
Maintenance of way expenses	47,865,568	34,591,703
Maintenance of equipment	93,287,339	62,196,767
Traffic expenses	3,464,274	2,510,703
Transportation expenses	159,203,006	114,767,234
General expenses	8,928,625	7,516,781
Total operating expenses	317,553,242	225,675,360
Net revenue from operation	21,071,214	57,983,971

The corporate income account is as follows:

	1920	1919
Compensation—January and February	$9,300,438	.....
Additional compensation account completed additions and betterments	237,569	.....
U. S. Government guaranty—March 1 to August 31	28,699,177	.....
Net railway operating income—September 1 to December 31	11,537,943	.....
Total (compared with compensation accrued in 1919)	49,444,407	$57,690,588
Total other income	15,459,803	13,619,366
Gross income	65,109,739	71,308,505
Interest on funded debt	30,736,911	29,227,222
Total deductions from gross income	50,263,819	48,194,885
Net corporate income	13,734,688	19,917,251
Dividends (5 per cent each year)	12,479,615	12,479,611
Surplus for the year	1,250,256	7,433,063

LIVE-STOCK DEALERS of western Canada, contending that the live-stock industry is almost completely ruined through high freight rates, have asked the Board of Railway Commissioners for a 50 per cent reduction in rates on cattle. Scarcely any cattle are now moving in Canada, and the dealers fear that cattle will remain in the country instead of being placed on the railways unless rates are made cheaper.



The Susitna Bridge on May 14, One Day Before an Ice Run.

Great Alaskan Bridge Built During Coldest Weather

Government Railway Structure Over Susitna River Provided With 504-ft. Span to Clear Ice Jams

THE largest railroad bridge in Alaska, in point of size of main span, was built last winter by the Alaskan Engineering Commission, where the government railroad crosses the Susitna river near Gold Creek. This bridge, which was completed in February, 1921, is on the main line 264 miles north of Seward, the southern terminus of the new railroad, and 150 miles north of Anchorage, the ocean port at the head of Cook Inlet. It consists of a south approach of twenty-eight 14-ft. trestle spans, one 70-ft. pony span and one 121-ft. through Howe truss spans; a 504-ft. steel through truss span of the Pennsylvania type over the main channel; and a north approach of one 121-ft. through Howe truss span, one 70-ft. pony truss span and two 14-ft. trestle spans, giving a total length end to end of timber stringers of 1,322 ft.

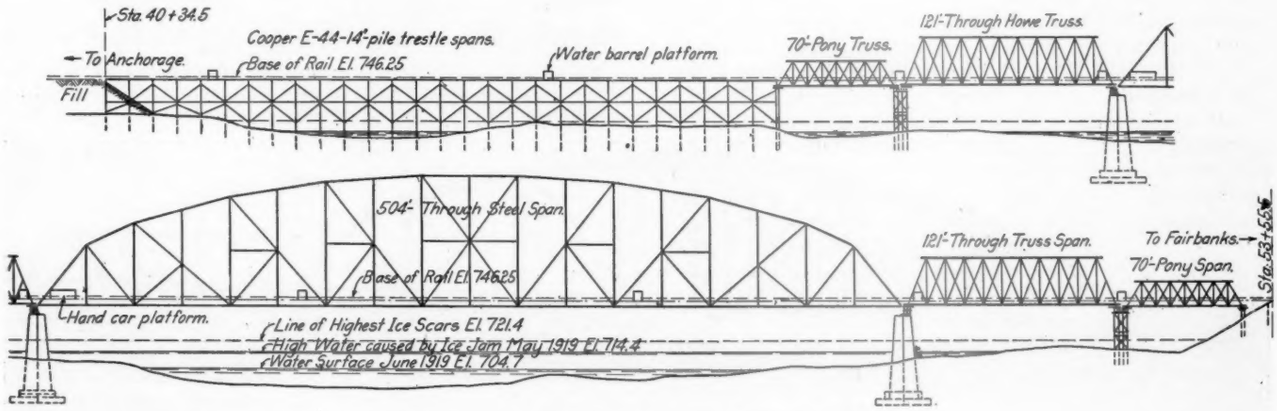


Diagram of Susitna Bridge and Stream Profile

Ice Jams Call for Clear Span Over Main Channel

The design of this structure first involved a study of the action of the river under summer and winter conditions. Observations of high water marks and ice scars on trees along the shore supplied the required information as to the highest elevation reached by the ice while in movement. The spring break-up usually occurs before the ice has become soft and in passing down stream massive pieces jam against islands and bars and against the shore at points where the river takes a sharp turn, back of which the water rises until the pressure breaks the dams. The accumulated water and ice then rush out at a high velocity and the force of this run would no doubt take out any timber piers in its way, while a concrete pier would not only be exposed to the tremendous pressure of the ice jam but also to under-mining created by the underwater scour that would result from the creation of an ice dam against the pier. A comparative estimate for the structure over the main channel to consist of two 250 ft. steel spans on three concrete piers, including a pier near the center of the channel, against a 504 ft. steel span on two concrete shore piers slightly favored the long span. The latter alternative was therefore adopted.

The combination of timber and steel trusses in the same bridge may appear peculiar, but it is believed that this design was justified by the following conditions: Due to the high price of bridge steel and concrete work at the time of construction, it was much cheaper to build all approach spans out of timber, making provision for possible renewal with steel and concrete at some later date after the life of the timber had been exhausted. The main piers were designed to support adjacent 200 ft. spans at some future time, each to replace one 70 ft. pony truss and one 121 ft. Howe truss as now built.

The trestle was designed for Cooper's E-44 loading, the timber spans for E-50 loading and the 504 ft. steel span for

E-60 loading. American Railway Engineering Association specifications of 1910 were followed in the design of the 504-ft. steel span except in the matter of wind loads. Trusses and bottom laterals were designed for 40 lb. per sq. ft., considered as being applied on the surfaces presented by the train and floor as seen in elevation and by 1½ times the area of the members of the windward truss together with 500 lb. per lin. ft. of span for the floor and top laterals.

Pier Construction Begun 22 Miles Ahead of Track

Pier construction was begun in May, 1920, when the end of track was 22 miles south of the bridge site, supplies being freighted by sleds until the river broke and thereafter by boats and wagons. The transportation difficulties were overcome to a large extent in the middle of September, 1920, when track was laid up to the site. At this time excavation for the south pier was complete and that for the north pier begun. A temporary trestle had been driven across the river 100 ft. downstream and parallel to the axis of the bridge to permit track-laying to proceed and to facilitate the erection of the bridge without interference with traffic and other construction work along the line extending to the north. The piling for the south approach, consisting of trestle bents, pile-piers and an abutment for the timber spans had been driven and the falsework for the steel span had been started from the north end, before the arrival of the track. To determine the character of the foundation for the concrete piers, test holes had been bored the previous winter to a depth of 60 to 75 ft. below the surface of the ground. The material encountered was compact sand, gravel and large boulders in layers of varying thicknesses, suitable for carrying pier loading without foundation piles.

For the south shore pier excavation Wakefield sheet piling was used and for the north shore pier an open caisson. Excavation was started in the wet with orange-peel buckets operated by two stiff leg derricks until hard compact material was struck, when the holes were pumped out and the work continued with pick and shovel, the laborers filling dump boxes operated by derricks. Excavation extended to an average depth of 25 ft. below the ground surface in each pier foundation. Drain ditches were maintained about one foot deep around the edges and sloped to carry seepage water to a sump at the downstream end of the excavation where one 5-in. and two 8-in. pulsometer pumps operated continuously in the lower levels of the work.

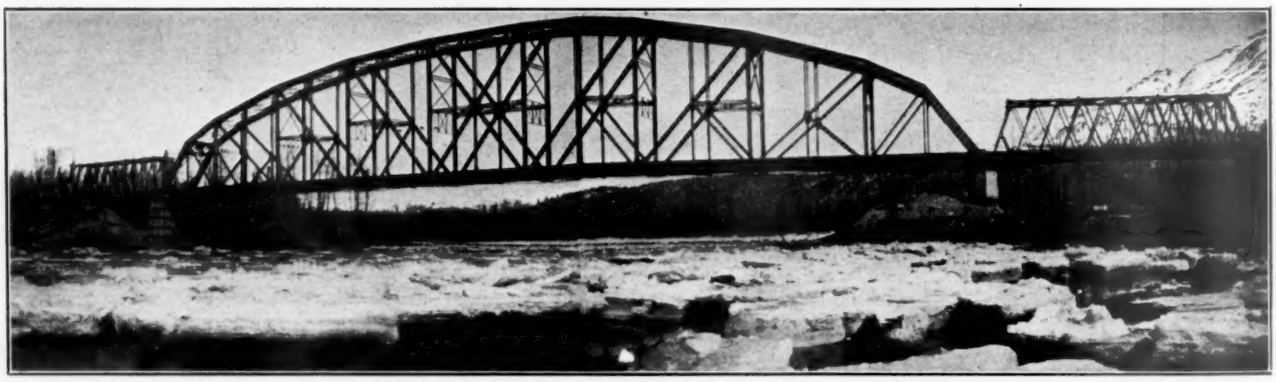
Considerable difficulty was encountered in finding sand and gravel suitable for the concrete piers. The importance of doing so, however, was forcibly brought out by a partial failure in one of the piers during September. It was concluded that this had resulted from inferior aggregate as well as poor cement and inadequate provision to meet the effects of the low air and water temperatures. Aggregate taken from pits in the vicinity of the bridge was not satisfactory, as samples were found to contain humus. The field test for humus, recommended by the Portland Cement Association, was applied to several deposits available along the railway line and all showed the presence of this element in various amounts except samples from a pit in a glacial moraine in front of Spencer glacier, located 56 miles north of Seward, which tested clear. As the natural aggregate from this pit was deficient in sand, 7 per cent of sand was added. This provided a satisfactory mixture and was used in the substructure.

The Main Span on November 29, 1920, with the Bottom Chord and Web Members Partially Erected

Extraordinary Measures Required in Placing Concrete

When the coffer dam, forming the pier enclosure, was unwatered, the bottom of the enclosure was under a 22-ft. head of water from the Susitna river which, due to the porous nature of the boulder and gravel formation, forced considerable water through the floor of the pit. The enclosure was 33 ft. by 69 ft. and it was found impracticable to partition off, place and hold concrete "in-the-dry" on this floor, the flow of water being too strong to permit of this being done. The temperature of the water, 35 deg. in November, and the large area, 2,277 sq. ft., made it impracticable to place concrete under water by bucket or pipe methods.

The following plan was devised to place the concrete under the circumstances of cold running water and low air tem-



To Avoid Ice Jams Was an Important Factor in the Design. This Ice Run Came on May 15 and Was Gone the Next Day

perature: A large sheet of canvas was prepared in one piece, sufficient to cover the bottom area entirely and to extend about six feet up the sides of the enclosure. This canvas was "formed-in" by wooden forms along the sides and ends, to provide a run-way for water around the edges. Steam coils were placed around the sides of the pier enclosure and the entire space was housed in and made warm. Sand and gravel delivered on cars for the concrete work were heated by being dumped on a platform holding perforated steam pipe coils. The aggregate went into the mixture hot and hot water was used in the mixing operations.

The south pier, containing 1,456 cu. yd. of concrete, was poured between October 24 and November 11, 1920, during which time temperature readings at the bridge site ranged from 2 deg. below zero to 48 deg. above. The north pier, containing 1,520 cu. yd., was poured between December 1 and December 18, 1920, when temperatures ranged from 12 deg. below zero to 34 deg. F. above zero. The pier pit was kept unwatered during concreting operations and the concrete

The Main Span on February 6, 1921. Erection Nearly Completed and the Span Still Supported on Falsework

placed from chutes and pipes leading from the mixer to the pier. Concrete was given sufficient time to set before allowing cold water to come in contact with it.

Erection of Steel Begun Before Completion of Piers

To hasten the erection of the 504 ft. span it was necessary to proceed without waiting for the completion of the piers. Falsework for this span, as mentioned, had been driven from the north and southward. The north approach trestle, piers and falsework for the timber spans were driven and a temporary deck laid. One of the 70 ft. pony spans was used temporarily to span the excavation for the north pier, thus permitting the construction of this foundation. Erection of steel started on November 8, 1920, from the north end at the second panel point, a yard having been constructed on the north side of the river which was reached by means of the temporary trestle. Erection of steel was continued to the south end and all steel except for two north panels was assembled by December 15, 1920. All steel in these two panels which could be erected without interfering with the temporary 70 ft. pony span over the north pier, was placed after December 25, 1920, and as soon as this temporary span was removed the balance of the steel was placed, completing the erection on January 8, 1921. The American Bridge Company, which did the erecting, used a 100 ton locomotive crane with a boom extended to a total length of 85 ft. This was supplemented in the yard by a 35 ton locomotive crane with a 50 ft. boom. The total weight of steel in the span is 1,803 tons.

But little riveting was done until after December 20, 1920, when over 90 per cent of the span was in place. Riveting was pushed from then until completion on February 9, 1921, during which time temperatures ranged from minus 42 deg. to plus 34 deg. F. On some cold and windy days the riveters usually did not work but on one occasion rivets were driven when it was minus 42 deg. in the morning and minus 12 deg. at quitting time. Rivets driven during very cold temperatures were retested several times in warmer weather and found to be in first class condition. The total number of field rivets was about 42,200.

The span was swung on February 2, 1921, and the first train passed over on February 6. The work of erecting the timber spans and finishing the trestle progressed simultaneously with the steel work, so that the bridge was entirely completed and ready to be put into service on February 16, 1921.

General supervision of the work was under Col. Frederick Mears, chairman and chief engineer of the Alaskan Engineering Commission, to whom we are indebted for the description presented above. The preliminary design of the 504 ft. steel span as well as design and details of the timber and foundation work were made by W. J. H. Fogelstrom, former bridge engineer, for the Commission, assisted by F. H. Chapin, assistant bridge engineer. The final design and details of the 504 ft. steel span were made by the American Bridge Company, which also fabricated and erected the steel. Modjeski and Angier, consulting engineers, Chicago, were retained to check and approve all designs and detail plans of steel work. Hildreth & Co., Chicago, performed the inspection of steel at the mill and shop.

Freight Car Loading

WASHINGTON, D. C.

THE NUMBER of cars loading with revenue freight showed another slight decrease during the week ending July 2, according to the weekly report of the Car Service Division of the American Railway Association. The total was 774,808, as compared with 891,621 in the corresponding week of 1920 and 743,226 in 1919.

Comparisons with the report for the preceding week show increases in the number of cars loaded during the week of July 2 with grain and grain products, coal, ore and merchandise and miscellaneous freight, which includes manufactured products, but decreases in livestock, coke and forest products.

Loadings of merchandise and miscellaneous freight totaled 469,842 cars, an increase of 1,735 cars over the preceding week. Grain and grain products increased 1,726 cars over the previous week to a total of 40,547 while 30,335 cars were loaded with ore or 1,414 more than during the week before. There were 157,265 cars loaded with coal during the week. This was an increase of 266 cars over the previous week but, on the other hand, was 35,769 less than were loaded during the corresponding week in 1920. It was, however, 2,331 cars more than were loaded during the corresponding week in 1919.

The greatest decrease was in the number of cars loaded with livestock, the total for the week being 24,923 or 3,306 less than during the week before. Forest products dropped off 1,885 cars to 47,542 while coke totaled 4,354 cars which was a decrease of 203 cars compared with the loadings of the week before.

Except for grain and grain products, decreases were re-

ported in the loading of all commodities as compared with the corresponding week last year.

Compared by districts, increases over the week before were reported in the number of cars loaded with revenue freight in the Southern, Northwestern, Central Western and Southwestern, but decreases in the Eastern, Allegheny and Pocahontas regions. All, however, were below the corresponding week in 1920.

The summary for the week of June 25 is given in the table above.

The demand for freight cars continues to increase according to reports received by the Car Service Division of the American Railway Association. For the week ending June 30 there was an average of 373,791 surplus freight cars or a decrease of 4,059 as compared with the previous week.

The total number of box cars, including ventilated, automobile and furniture cars, in excess of current freight requirements was 146,298, which was a decrease within a week of 6,335. A decrease of 1,445 coal cars was also reported, the total on June 30 being 162,537 compared with 163,982 on June 23. Surplus stock cars numbered 18,170 compared with 20,029 one week before or a reduction of 1,859. These reductions, however, were in part counteracted by an increase of more than 6,200 in the number of surplus cars of miscellaneous classes, due principally to a big increase in the number of ore cars now being stored on sidings in the northwest. There was also an increase of approximately 200 in the number of surplus coke cars.

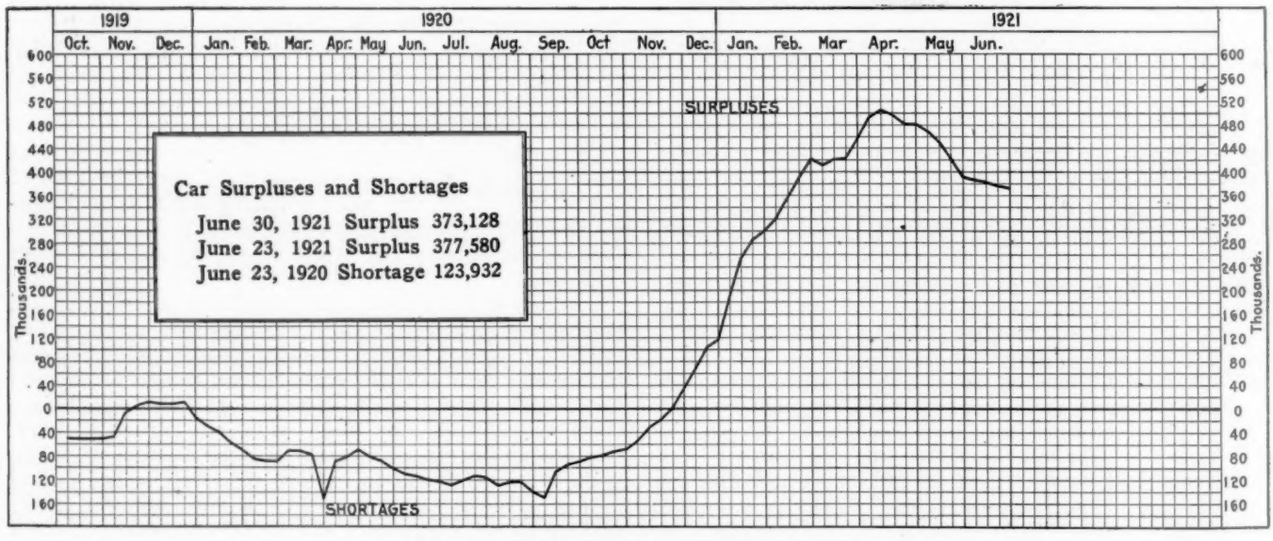
REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

Summary—All Districts, Comparison of Totals This Year, Last Year, Two Years Ago. For Week Ended Saturday, June 25, 1921

Districts	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L.C.L.	Miscellaneous	Total revenue freight loaded: This Year 1921	Corresponding Year 1920	Corresponding Year 1919	Received from connections: This Year 1921	Corresponding Year 1920	Corresponding Year 1919
Eastern	1921	5,989	2,963	41,250	901	5,151	1,783	57,497	70,947	186,481	.....	.....	197,026	.....	.....
	1920	6,400	3,022	56,754	2,997	8,530	7,919	24,803	113,357	.....	223,782	211,554	.....	254,316	229,154
Allegheny	1921	2,516	3,064	47,390	2,309	2,905	6,873	43,804	51,485	160,346	.....	.....	110,064	.....	.....
	1920	2,196	3,100	56,082	6,295	3,377	9,791	36,422	65,136	.....	182,399	176,137	.....	129,783	129,709
Pocahontas	1921	141	148	25,357	24	1,288	23	2,654	5,227	34,862	.....	.....	14,164	.....	.....
	1920	129	162	21,284	586	1,905	193	123	9,481	.....	33,863	37,207	.....	22,228	18,528
Southern	1921	2,959	2,207	20,126	443	14,294	553	37,720	34,058	112,360	.....	.....	61,908	.....	.....
	1920	2,900	2,312	24,653	195	16,172	3,341	25,748	48,780	.....	124,101	116,272	.....	75,084	59,780
Northwestern	1921	11,159	7,841	5,373	583	14,352	18,317	28,075	32,217	117,917	.....	.....	43,384	.....	.....
	1920	9,935	7,477	9,272	1,259	17,673	46,626	22,092	43,822	.....	158,156	150,979	.....	63,359	52,617
Central Western	1921	11,260	9,710	13,529	160	5,218	566	30,473	35,827	106,743	.....	.....	49,987	.....	.....
	1920	9,167	10,023	21,552	436	5,920	5,069	33,125	42,593	.....	127,885	102,092	.....	72,612	60,625
Southwestern	1921	4,797	2,296	3,974	137	6,219	806	15,455	22,668	56,352	.....	.....	40,070	.....	.....
	1920	3,941	2,678	5,902	114	7,092	736	16,631	24,223	.....	61,317	51,443	.....	47,047	40,787
Total all roads	1921	38,821	28,229	156,999	4,557	49,427	28,921	215,678	252,429	775,061	.....	.....	516,603	.....	.....
	1920	34,668	28,774	195,499	11,882	60,669	73,675	158,944	347,392	.....	911,503	.....	.....	664,420	.....
	1919	29,476	28,389	187,158	.....	63,888	68,885	.....	467,888	.....	.....	845,684	.....	.....	591,200
Increase compared	1920	4,153	.....	.....	.....	.....	.....	56,734	.....	.....	.....	.....	.....	.....	.....
Decrease compared	1920	.....	545	38,500	7,325	11,242	44,754	.....	94,963	136,442	.....	.....	147,817	.....	.....
Increase compared	1919	9,345	.....	.....	4,557	.....	.....	215,678	.....	.....	.....	.....	.....	.....	.....
Decrease compared	1919	.....	160	30,159	.....	14,461	39,964	.....	215,459	70,623	.....	.....	74,597	.....	.....

L.C.L. Merchandise loading figures for 1921 and 1920 are not comparable, as some roads are not able to separate their L.C.L. freight and miscellaneous of 1920. Add merchandise and miscellaneous columns to get a fair comparison.

June 18	1921	40,994	28,541	157,243	5,102	50,472	28,866	215,622	253,901	780,741	916,736	807,907	514,358	675,443	574,895
June 11	1921	41,119	29,135	163,088	4,788	51,393	30,179	215,740	253,555	788,997	930,976	807,205	509,129	681,514	563,838
June 4	1921	41,394	24,039	142,674	4,642	48,227	28,311	195,246	221,975	706,508	828,907	776,610	480,162	657,709	524,731
May 28	1921	46,337	27,518	165,870	5,605	50,277	28,673	217,707	248,862	790,849	898,169	763,761	519,191	670,536	550,858



Curve of Net Car Surpluses and Shortages

THE AVERAGE COST OF FREIGHT TRAIN OPERATION (selected accounts) for April was $1.876 per freight train mile, according to the monthly bulletin published by the Interstate Commerce Commission. This is slightly greater than the average for these selected accounts for April, 1920, $1.874, but it represents a considerable saving as compared with the average for March, which was $1.974. The average cost per passenger mile, selected accounts, was $1.043 as compared with $.991 in April, 1920, but was also less than the average for March, 1921, which was $1.077.

Government and Private Operation in Canada

An Analysis of Results Obtained on the Two Large Railway Systems in That Country Under State and Company Control

By J. L. Payne
Formerly Comptroller of Statistics, Department of Railways and Canals of Canada

SINCE THE SPECIAL announcement of a deficit of $70,000,000 on the Canadian National Railways for the fiscal year 1920 there has naturally been a great deal of speculation and inquiry as to the underlying causes. That deficit was, of course, much larger than the figures given out. It omitted a very large volume of fixed charges. The only excuse for this omission was that some of these charges, on the basis of standard accounting, are not definitely known. They are readily ascertainable; but they have not been made up. That was the loose way in which state railway accounting was begun more than half a century ago, and it has never been thought worth while to make a change. There was no demand for the information anyway. Absolute indifference prevailed with respect to the whole matter.

A reversal of public sentiment has taken place within the past three months. The craving for authentic data is general and insistent. Thinking men all over the country are expressing deep concern in the volume of actual loss and the causes which have brought it about. Since the facts with regard to the deficit were presented in recent issues of *Railway Age* there is no intention of repeating them now. It will be sufficient to bear in mind that the fixed charges attaching to $2,300,000,000 of capital liability, added to the operating shortage, will probably produce a deficit of not less than $140,000,000 for the current year. It need not be said that, inasmuch as this loss falls wholly on the Dominion treasury, it is a serious matter to a country like Canada, with a population of 9,000,000 and a gross revenue of less than $500,000,000.

Judgment by Comparison

If a glance is taken at the map of Canada, it will be seen that three lines of railway run closely parallel to each other from Winnipeg to the Pacific coast. One of these is the Canadian Pacific, the other two form parts of the Canadian National group. As units, the latter are the Canadian Northern and the Grand Trunk Pacific. The eye is scarcely able to follow the parallel through Ontario, Quebec, and the Eastern Provinces; but it nevertheless exists. That will be obvious when a statement of operating mileage by provinces is brought under the eye. The facts from West to East are as follows:

	Canadian National	Canadian Pacific
British Columbia	1,201	1,816
Alberta	1,816	1,901
Saskatchewan	3,371	2,777
Manitoba	2,294	1,728
Ontario	3,120	3,286
Quebec	1,935	1,076
New Brunswick	765	524
Nova Scotia	375	576
	14,877	13,694

One or two explanations are necessary in relation to the foregoing table. It does not include the mileage of the Grand Trunk nor of a number of branch and subsidiary roads. The Prince Edward Island Railway is also omitted. If these were all brought in the mileage of the Canadian National would rise to 22,500. But the Grand Trunk had not been officially taken over by June 30, 1919, which happens, for reasons not creditable to the new Dominion Bureau of Statistics, to be the last year for which information is available on a basis permitting of direct comparisons. The units which will be compared with the Canadian Pacific are the Canadian Northern, the Grand Trunk Pacific, the National Transcontinental and the Intercolonial. They contribute the mileage in the statement. If the omitted mileage and the operating results therefrom were brought in they would merely serve to make matters worse.

It will be observed that these roads have closely corresponding mileages in the various provinces. They tap in about the same measure the great wheat growing areas of the west, and meet on an equal footing in the industrial centres of Ontario and Quebec. They run through the maritime provinces practically side by side. Therefore it would be difficult to find any good ground for objection to the comparisons which will be made. Yet these two systems had operating results far apart in 1919. The Canadian Pacific had a net corporate income of $36,977,263 and the Canadian National units had a deficit of $40,650,222. This deficit, in accordance with the reprehensible practice of many years, left out of the reckoning an immense amount of fixed charges.

The object immediately in view is to look carefully at the various aspects of operating results and to see if any reasons for this adverse showing by the Canadian National group can be identified. If, for example, it were proposed to subject the system to searching examination, what tests would be applied by a skilled railway accountant, or a train railway operator, to locate the weak spots? Either of these investigators would certainly probe beneath the surface in a perfectly proper effort to ascertain why in the case of two great railways, operating side by side, one should be strong and prosperious and the other weak and insolvent. Having located the trouble centres, he would next seek to know whether or not the adverse results arising therefrom might have been modified if not wholly prevented.

Where the Losses Came In

The four units of the Canadian National Railways here under review, and the Canadian Pacific, had the following operating results in 1919:

	Canadian National	Canadian Pacific
Gross earnings	$93,173,827	$162,846,470
Operating expenses	104,032,753	130,416,995
Tons hauled	25,754,622	25,894,741
Passengers carried	10,551,151	14,542,282
Earnings per mile	6,263	11,900
Expenses per mile	6,993	9,524
Earnings per train mile	3,010	4,104
Expenses per train mile	3,361	3,307
Operating ratio	111.6	80.1

Certain points of similarity will here be observed in contrast with other points of great dissimilarity. The tonnage of freight was almost identical; yet gross earnings and earnings per mile of line, as well as per train mile, were far apart. In this relation three facts should be candidly stated because they are advantageous to the Canadian Pacific: First, the Canadian Pacific had average ton mile receipts of .963 as compared with .892 by the Canadian National. This was due to the higher proportion of first class freight. Second, the Canadian Pacific had a larger average haul; and third, the Canadian Pacific had a higher traffic density.

With these more or less basic facts in mind, it is now important to apply analytical methods to some of the details which spring therefrom. In the operating ratio we have at

once a strong clue to the field in which weakness or faulty administration is likely to be found, and let it be said at once we shall be rewarded by several rather startling discoveries as we proceed. For this inquiry the years 1917 and 1919 are selected, for good and definite reasons. In the former year the Canadian Northern and Grand Trunk Pacific, representing the great western section of the Canadian National, were in corporate hands. In the latter they had been for a full year and more under government control. That fact at once suggests the pertinent question as to what were the general results of the change. Were betterments brought about? Was administration strengthened or weakened? Let the facts give the answers.

Excessive Transportation Expenses

Since all the operations of a railway find their focus in the running of trains, the cost of transportation becomes fundamental. In this instance we shall be just to the Canadian National units in comparing them with the Canadian Pacific. We must first, however, find a satisfactory gage. For that purpose ton miles and passenger miles are combined and taken as a standard which will not be questioned. Ton and passenger miles represent not only the full service of railways, but the lowest unit of measurement obtainable. They place the roads in comparison on an absolutely common footing. The cost of transportation per ton mile and passenger mile will get us at once to the very core of operating conditions and, by comparison with a strong road, tell us whether or not there is weakness in that vital center. Here are the facts as to transportation expenses per ton and passenger mile:

	1917	1919
Canadian Northern	.321 cent	.634 cent
G. T. Pacific	.391 cent	.673 cent
Transcontinental	.294 cent	.439 cent
Intercolonial	.442 cent	.708 cent

The average for the four units in 1917 was .355, as against .288 for the Canadian Pacific. In 1919 the average was .626 for the Canadian National and .503 for the Canadian Pacific.

The difference between transportation cost per ton and passenger mile on the Intercolonial and Canadian Pacific is very striking. In the case of the Canadian Northern, which is responsible for 52 per cent of the freight tonnage and 60 per cent of gross earnings, there was a distinct worsening of operating conditions. From being 11.5 per cent higher than the Canadian Pacific in 1917 the cost rose to 26.0 per cent higher in 1919.

We get a little nearer to our final answer when our inquiry discloses the fact that while these four units of the Canadian National increased gross earnings in 1919 over 1917 by 24.6 per cent, the Canadian Pacific scored a betterment of but 10.9 per cent during the same period. Thus the Government system had a distinct advantage in respect of income. The trouble was not in that field. While, however, the Canadian Pacific was adding to operating expenses by 34.9 per cent, the Canadian National was swelling outgo by 69.7 per cent. The result in dollars and cents was that a net operating surplus of $13,510,116 in 1917 was turned into an operating deficit of $10,858,926 in 1919. The Canadian Pacific, on the other hand, came out with net operating earnings of $32,429,475.

Extending the analysis, by measuring both earnings and operating expenses by combined ton and passenger miles, it is found that while the Canadian National increased gross earnings from .831 in 1917 to 1.122 cents in 1919 the Canadian Pacific advanced from .897 to 1.282. This was equal to a gain of 35.0 per cent in one case and 42.9 in the other. With respect to operating expenses, however, the Government group rose from .681 to 1.252 while the Canadian Pacific went up from .591 to 1.027. The difference in one instance was 83.9 per cent and in the other 73.8. Putting it in another and suggestive way, while the difference between the two systems was 15.2 per cent in 1917 adverse to the Canadian National, in 1919 it was 21.9. That difference tells us rather plainly how much better the Canadian Pacific was able to meet the rising tide of operating cost than was the management of the Government system.

Trainload and Carload Tests

A very strong sidelight is thrown on the operating results as expressed in terms of dollars and cents, and we begin to catch a clear glimpse of weakness in fundamentals, when we look into the trainload and carload situation on the Canadian National as contrasted with that on the Canadian Pacific. The facts will spare me from any comment whatever.

In carload the Canadian National is not open to serious criticism. It was only one ton below the average of the Canadian Pacific in 1917 and it picked that up in 1919. That is the single sign of betterment in operating conditions. By all other tests, without exception, the system gave a poorer performance in 1919 than in 1917.

The trainload of the various units was as follows:

	1917	1919
Canadian Northern	378.4	337.9
G. T. Pacific	368.8	302.1
Transcontinental	446.6	502.0
Intercolonial	362.9	402.1
Average	382.5	370.1

This result was 38.5 per cent below the average trainload of the Canadian Pacific in 1917 and 41.1 per cent in 1919. It might be assumed that this striking difference was due to unfavorable grades on the Government roads, but that would be a mistake. The Canadian Pacific is at a marked disadvantage in that regard. It has always been the boast of the Canadian Northern that its .4 per cent controlling grade was the best of any road of similar length in North America; yet the Canadian Northern had an average trainload of 378.4 tons in 1917 and fell to 337.9 in 1919. That must be compared with 529.8 and 522.1 on the Canadian Pacific.

The lighter trainload of the Canadian National is due to fewer cars hauled. In 1917 the number was 17.2; but in 1919 this had decreased to 15.6. On the other hand, the Canadian Pacific had an average of 22.6 cars in 1917 and 22.2 in 1919.

Wages and Employees Compared

It was during the year ended June 30, 1919, that the McAdoo award began to make its pernicious influence felt among the railways of North America, and it would seem to be perfectly fair to compare the way in which this difficulty was met by the Canadian National and the Canadian Pacific. Two tests have been applied, and the results are rather significant. The first deals with the volume of wages per ton and passenger mile combined. The showing is as follows:

	1917, cent	1919, cent	Increase, per cent
Canadian Northern	.389	.819	110.5
G. T. Pacific	.543	1.100	102.6
Transcontinental	.418	.622	48.8
Intercolonial	.445	.782	75.7
Average	.415	.798	94.7

These figures must be contrasted with averages of .344 and .625 by the Canadian Pacific. Incidentally, this test reveals the extent to which the swollen payroll affected operating cost of all railways in Canada up to 1919. But while the Canadian Pacific was able to keep the increase down to 78.8 per cent the Canadian National, dealing with precisely the same conditions as to scale and classification, had an addition of 94.7 per cent.

The second test related to the combined ton and passenger miles per employee. As to number of employees, the Canadian Pacific between 1917 and 1919 met a decline of 21.8 per cent in ton and passenger miles by cutting down the operating staff by 2.1 per cent. The Canadian National, on the other hand, had a drop of 9.1 per cent in the same mileage, yet added to the number of employees by 21.8 per cent.

The result, measuring ton and passenger miles by employees, was the following performances:

	1917	1919
Canadian Northern	235,908	154,399
G. T. Pacific	185,786	133,563
Transcontinental	217,938	181,940
Intercolonial	178,649	167,831
Average	212,547	159,962

The Canadian Pacific had, per employee, an average of 261,713 ton and passenger miles in 1917 and 208,331 in 1919. The decrease in the case of the Government roads was equal to 24.8 per cent, and in the case of the Canadian Pacific 20.3. The contrast in administrative skill in respect of both wages and performance by employees is obvious. The broad question of operating policy, as well as the further consideration of morale, are involved in the tests.

It should not be necessary to repeat that the standard of appraisal here employed is absolutely just. Ton and passenger miles express quite directly the service which each railway is called upon to give, and it is therefore fair to measure both financial and operating results by that comprehensive gage. We have seen how the two systems here contrasted stand up under the analysis made, and while many other deductions are plainly and pertinently suggested I have no disposition to deal with them. My purpose has been to present the facts and allow them to tell their own story as to how the various units composing the Canadian National performed in 1917 and 1919.

The Results in 1920

The facts for the fiscal year 1920 cannot be presented in comparative form for two reasons in chief: First, the essential factor of loaded car mileage is lacking; second, the year to which the figures recently presented to Parliament relate ended December 31 instead of June 30. Some general comparisons, however, can be made, subject to the qualifications as to the difference in years.

The operating ratio rose in 1920 to 124.01, and the operating deficit to $36,842,970. This should be compared with a ratio of 81.39 by the Canadian Pacific and a net operating revenue of $33,153,045.

Operating expenses per ton and passenger mile combined were equal to 1.567 cents on the Canadian National and 1.179 on the Canadian Pacific. Without making allowance for the difference in the years, it may be said that these results showed a worsening by 25.2 per cent over 1919 on the Government system, as compared with an increase of 14.8 per cent on the corporate road. An important, but quite unavoidable, qualification in these and succeeding results is that they do not include figures from the Grand Trunk Pacific. Data as to mileage for that road are lacking, which prevents their being brought in. The effect would, however, quite definitely be to aggravate the situation as disclosed by the other units, for the Grand Trunk Pacific in 1920 made much the worst showing in its history.

Measuring transportation expenses by ton and passenger miles in 1920 the result gives .774 cent for the Canadian National and .556 for the Canadian Pacific. In this particular test the showing of the Government roads was worse by 23.6 per cent in 1920 over 1919, as compared with an increase of 10.5 per cent by the Canadian Pacific.

In short, if a full and accurate comparison could be made as between operating results on the Canadian National lines in 1917 and in 1920 it would unquestionably show not only a serious aggravation of all the conditions, but a much greater increase in the adverse showings than was experienced by the Canadian Pacific. The point which should be given proper emphasis is that, while the Canadian National system is fundamentally weak, operating results have been made worse year after year by unskillful, wasteful and incompetent administration. There cannot possibly be any doubt of that, and it has a vital bearing on the exceedingly perplexing Canadian railway problem at this moment.

Tentative Valuations Issued

WASHINGTON, D. C.

THE INTERSTATE COMMERCE COMMISSION, Division I, has issued a tentative valuation of the property of the Western Pacific as of June 30, 1914, stating the final value of the property used for common carrier purposes as $66,730,011, which is less than the amount of bonds outstanding at that time, which amounted to $75,000,000, to say nothing of $75,000,000 of capital stock and other obligations which increased the total capitalization as of the valuation date to $172,720,912. The final value stated is also less than the original cost, which the report says cannot be ascertained exactly but which it states "as closely as it is possible to determine from the carriers' records with certain limitations" described, as $72,616,081. The report covers 925 miles of main line and 1,118 miles of track, much of which was very expensive to construct. The report says the cost of building the section from Chilcoot to Oroville, Cal., is probably not exceeded by the cost of the same length of any other railroad in the United States. The final value of the property owned is given as $66,075,947.

The company constructed all of its mileage except about 31 miles of completed road, together with about 6 miles of other tracks bought from one of the predecessor companies, but most of the capital stock was exchanged, together with $1,518,063 in cash for the unappraised property of seven predecessor companies and certain traffic agreements. The investment in road and equipment, including line, is stated in the books of the company to be $156,318,136. This the commission has readjusted to $147,552,091 and, the report says, if the $74,837,000 of capital stock exchanged be subtracted the investment account would stand at $72,715,091. It could not be determined from the carrier's accounts whether the cash given for the property of the predecessor companies was equal to or greater or less than the value of these properties; hence, the report says, it cannot be determined how much stock was issued without consideration. But the $72,715,091 is said to represent the nearest approximation to the actual investment of the carrier in existing road and equipment that can be made from obtainable records. Under the recent reorganization the capitalization of the Western Pacific has been reduced to a figure more consistent with what the commission has stated as the value of the property.

The cost of reproduction new of the common carrier property used other than land is stated as $61,577,074 and the cost of reproduction less depreciation as $55,751,732. The report describes some of the factors taken into consideration in reaching this figure, as well as the details of the various accounts. The present value of the carrier lands owned and used is stated as $6,048,133 and the present cost of condemnation and damages or of purchase of the lands used for carrier purposes in excess of the present value is stated as $4,355,287. In addition, the present value of non-carrier lands held by the carriers is given as $3,752,680. From the beginning the results of the operations of the carrier have been unprofitable and insufficient to meet the interest on the funded debt, hire of equipment charges, rents and other miscellaneous items. The results of the corporate operations for the period from July 1, 1910, to June 30, 1914, were a net deficit of $15,537,356.

Figures for Other Carriers

The commission has issued tentative valuations giving the final value as of the valuation dates as follows:

Wood River Branch	1915	$115,537
Riverside, Rialto & Pacific	1916	311,488
San Joaquin & Eastern	1916	1,148,000
Central of Oregon	1916	114,450
Grand Canyon	1916	1,359,398
Sumpter Valley	1916	1,829,745
Woodstock	1917	489,213
Minneapolis & Rainy River	1915	1,250,000
Delta Southern	1915	675,346

Charles Azro Prouty

CHARLES AZRO PROUTY, director of valuation of the Interstate Commerce Commission, and for over 17 years a member of the commission, died at his home at Newport, Vt., on July 8 after having been ill for nearly a year. He had not been at his office since about the first of the year, but for several months had continued to keep in touch with his work and to handle his correspondence from his apartment. About two months ago he was taken from Washington to Newport in a special car provided by Thomas W. Hulme, vice-chairman of the Presidents' Conference Committee on Valuation.

Mr. Prouty was appointed a member of the Interstate Commerce Commission in December, 1896, and upon the expiration of his term he was successively reappointed until he resigned as a commissioner in February, 1914, to organize the valuation work provided for by the law passed in 1913. He has thus been a prominent figure in the field of federal railroad regulation for a quarter of a century and because of his ability and strong personality he exerted an important influence upon the course of the development of public regulation of the carriers. He had a habit of speaking his mind freely, the courage of his convictions and as he possessed an unusual ability to write and speak good clear English in a forceful way, his many public addresses and written articles on the subject represent a most important contribution to the literature of the railroads in their public relations. Becoming a member of the commission at a time when conditions in the railroad world were such that the need of the curb of governmental authority was more strongly manifested than it has been of recent years, as well as at a time when the commission had comparatively little power and felt called upon to emphasize the necessity for strengthening its authority, Mr. Prouty for a number of years quite naturally came to be looked upon as representing what railroad men would term the punitive side of regulation. In later years, however, as the process of subjugating the railroads became more complete, his attention was devoted more toward what a railroad officer might regard as constructive regulation and his influence was exerted on several occasions to assist the swing of the pendulum in the other direction.

Charles A. Prouty

In the early days of commission regulation Mr. Prouty was a caustic critic of many railroad practices and by newspaper interviews as well as by the language used in his official opinions did much to call the attention of the public to the need for various reforms. At this period he was very prominently quoted in the newspapers as saying that the railroads only refrained from buying the commission because it was not worth buying. He was the author of several opinions of the commission which ordered drastic reductions in freight rates as well as of the opinion in the Eastern rate advance case of 1911, which denied one of the first of the applications of the roads for a general rate advance, but he was also one of the first public men to point out that a failure of regulation of railroads as private companies might come as the result of the discouragement of investors. While chairman of the commission in 1912 he made the statement in a public address that "while we can provide by legislation the sort of cars which a railroad shall use and the rates which it shall impose, we cannot by legislation force one single dollar of private capital into railway investment against its will." He also took occasion to emphasize on several occasions the conviction that while the government must regulate the railroads, it ought to leave the private capital invested as free as it can be left consistent with the public interest.

After he resigned as a member of the commission and felt more free to express his individual ideas he did much to assist in the removal of some of the prejudices against the railroads that had existed in the public mind as the result of former conditions and while the legislation for a return of the railroads to private management was under consideration in 1919 his influence was exerted in support of the efforts to provide some assurance to railroad investors by a statutory rule prescribing 6 per cent as a fair return. He was an outspoken man of strong opinions which were usually stated with considerable vigor and in expressive language. He was also able to back up his opinion with strong arguments, in which he frequently preferred to rely on what he called common sense than upon legal technicalities.

Mr. Prouty did not live to see accomplished the results he had anticipated would follow from the valuation work and he was always careful to refrain from predicting how soon the effects would be felt, but he lived to see carried out the bulk of the preliminary work of gathering the facts which was organized under his direction and leaves to others the task of putting them into practical effect. The commission has issued an announcement that his death will not interfere with the completion of the valuation work, which during his illness has been and will henceforth continue to be carried on under the direction of the associate director of valuation and Division I.

Mr. Prouty was born October 9, 1853, at Newport, Vt. He was graduated from Dartmouth College in 1875. He was assistant to Prof. S. P. Langley at Allegheny Observatory in 1875 and 1876 and then taught school for several years. He was admitted to the bar in 1882 and practiced law at Newport, Vt., from that year to 1896. He was a member of the lower branch of the Vermont Legislature in 1888 and was reporter of decisions of the Supreme Court of Vermont from 1888 to 1896, when he was appointed a member of the Interstate Commerce Commission. Mr. Prouty served as chairman of the Interstate Commerce Commission during the year 1912.

Will Investigate Relations of Western Pacific

I. C. C. Institutes Inquiry of Dealings with D. & R. G.—Denver & Rio Grande Western Stock Issue Approved

WASHINGTON, D. C.

THE INTERSTATE COMMERCE COMMISSION on July 12 announced the institution of a proceeding of inquiry and investigation into the history, financial operations, accounts, and the practices of the Western Pacific Railway, the Denver & Rio Grande Railroad, the Western Pacific Railroad and the Denver & Rio Grande Western Railroad, their respective relations with one another, and "any and all other matters pertaining thereto, to determine the manner and method in which the business of said companies and each of them is or has been conducted, with a view to the making of a report and to the making of such order or orders as may be proper in connection with the issue of securities by and the accounts and practices of said companies or any of them." The order was dated July 11.

Denver & Rio Grande Stock Issue Approved

At the same time the commission granted authority to the Denver & Rio Grande Western to issue 300,000 shares of common stock without nominal or par value, but held that the proposed acquisition of all the outstanding stock of the applicant by the Western Pacific Railroad Corporation is not within the scope of paragraph (2) or paragraph (6) of section 5 of the act, relating to the acquisition of control of a carrier, and that the proposed acquisition and operation by applicant of the Denver & Rio Grande Railroad is not within the scope of paragraph (18) of section 1 of the act. The commission report on this matter said:

A joint hearing was held on April 25 upon this application and upon the application of the Western Pacific Railroad for authority to issue certain bonds. No objection to the granting of the application was offered by any authority of any state in which the applicant proposes to operate.

The protective committee of the stockholders of the Denver & Rio Grande appeared at the hearing for the purpose of noting on the record the facts with respect to litigation pending in the district court for the district of Colorado between certain of the stockholders, as parties plaintiff, and the applicant and others, as parties defendant; and also for the purpose of objecting to the commission entertaining jurisdiction of the application unless and until applicant complies with the provisions of paragraph (18) of section 1, and paragraph (6) of section 5 of the interstate commerce act.

The old Denver company is a consolidated corporation which succeeded a former company of the same name and the Rio Grande Western, which companies, by contract dated June 23, 1905, in practical effect guaranteed payment of principal and interest of the first mortgage, 5 per cent, 30-year gold bonds of the Western Pacific Railway. The last mentioned company defaulted in the payment of interest due March 1, 1915, whereupon the first mortgage was foreclosed and the property was sold for $18,000,000 to representatives of the holders of a large amount of the bonds. The Western Pacific *Railroad* Company was then organized by such bondholders to take over and operate the property purchased. The Western Pacific Railroad *Corporation* was also organized by the same bondholders, and all of the capital stock of the operating company, except a few qualifying shares held by its directors, was acquired by the holding company.

After the application of the $18,000,000 received from the sale of the property of the old Western Pacific company there still remained unpaid upon the bonds $38,270,343. The Equitable Trust Company of New York, the trustee under the first mortgage, obtained a judgment for this amount on June 14, 1917, against the old Denver company based upon the guaranty contained in the contract of June 23, 1905, and thereafter a receiver was appointed for such company. As a result of various proceedings considerable amounts were realized from the sale of certain free assets of the old Denver company which were applied upon the judgment debt and interest. The balance remaining unpaid amounted on September 25, 1920, to $36,192,655.78. The district court on that date directed the sale of the remaining property of the old Denver company for the purpose of satisfying the last-mentioned amount. Such sale took place at Denver on November 20, 1920, and the property was purchased for approximately $5,000,000 by John F. Bowie, John B. Marsh and Ralph M. Arkush, on behalf of the holding company, which in turn represented the interest of approximately 95 per cent of the bondholders of the old Western Pacific company. The sale was confirmed on March 28, 1921, and is to be consummated as soon as possible after the commission has authorized the proposed issue of securities.

The Denver & Rio Grande Western has been organized by the holding company to take over practically all of the property of the old Denver company. The purchasers of the property have agreed with applicant by contract dated April 4, 1921, to cause title to be vested in the applicant, and as the principal consideration therefor, applicant will issue the 300,000 shares of its stock without nominal or par value, authority for the issuance of which was asked. Such stock will be acquired by the holding company, which has been represented in the transaction by the purchasers, and will be retained by it for the purpose of maintaining control of the applicant.

The property has been sold subject to the lien of all existing mortgages thereon, but as a result of the sale the property will be relieved of liability for the balance remaining unpaid on the judgment of the Equitable Trust Company of New York, amounting to $35,224,493. The outstanding capital stock of the old Denver company is $49,775,670, par value, preferred, and $38,000,000, par value, common. The applicant for the present will have outstanding only the proposed issue of 300,000 shares of its common stock without nominal or par value. The total authorized capital stock of the applicant, however, is 500,000 shares of the par value of $100 of preferred stock and 1,000,000 shares of common stock without nominal or par value. The property will be acquired by the applicant subject to outstanding funded debt amounting to $121,175,500.

The $32,063,500 of first and refunding mortgage bonds and the $10,000,000 of adjustment mortgage bonds are now in default by reason of the fact that part of the collateral pledged to secure them consisted of $25,000,000 of second mortgage bonds of the old Western Pacific company, the value of which was destroyed by the foreclosure of the first mortgage above mentioned.

Negotiations are now in progress between the holding company and the holders of the refunding bonds and the adjustment bonds, which contemplate their retirement through foreclosure and the substitution, if all of the bondholders consent, of $25,750,000 of 7 per cent preferred stock of the applicant and $15,750,000 of 5 per cent bonds secured by a junior lien on the applicant's property. If the proposed substitution is effected, the fixed charges upon the property will be reduced approximately $1,500,000 per annum. The testimony shows that it is desirable to terminate the present receivership

although the future of the applicant will remain uncertain until some agreement has been reached with the holders of the bonds.

It appears that the applicant is in need of new equipment and of betterments to its way and structures. The holding company proposes to finance these requirements to the extent of $12,000,000, for which it is proposed ultimately to issue to the holding company an additional 120,000 shares of applicant's common stock without nominal or par value. Pending an agreement with the holders of the refunding bonds and adjustment bonds, however, the holding company will make advances only where they can be adequately secured.

Applicant stated in the application that it is unable to assign a cash value at this time to the property to be acquired by it.

Holding Company Not a Carrier Subject to the Act

After outlining the foregoing the commission said:

The holding company is neither a carrier subject to the act nor organized to engage in transportation subject to the act.

Referring to the objections made by the stockholders' committee of the old Denver company we are of the opinion that the proposed acquisition and operation by the applicant of the properties of the old Denver company are not within the scope of paragraph 18 of section 1 of the act because such property was in existence and was operated in interstate commerce prior to the effective date of that paragraph. We are further of the opinion that the proposed acquisition of applicant's stock by the holding company does not constitute a consolidation of the property of two or more carriers by railroad subject to the act into one corporation for the ownership, management, and operation of properties theretofore in separate ownership, management, and operation within the meaning of paragraph 6 of section 5 of the act. The testimony shows that although the holding company will by stock ownership control both the applicant and the Western Pacific Railroad Company, the properties of the operating companies will be separately owned, managed and operated.

Inasmuch as the holding company is not a carrier engaged in the transportation of passengers or property subject to the act, the acquisition of the control of the applicant by the holding company is not within the scope of paragraph 2 of section 5.

We find that the proposed issue and sale of common capital stock without nominal or par value (a) are for lawful objects within the corporate purposes of the applicant, and compatible with the public interest, which are necessary and appropriate for and consistent with the proper performance by it of service to the public as a common carrier, and which will not impair its ability to perform that service, and (b) are reasonably necessary and appropriate for such purposes.

Commissioner McChord, in a concurring opinion, said he concurred in the majority report, except that he was of opinion that the holding company is subject to the provisions of paragraph 2 of section 5 of the Interstate Commerce Act.

Commissioner Eastman, dissenting, said he was not disposed to question the desirability of an investigation, but that if one is justified, it is better that the Denver property should remain in the hands of a receiver appointed by the court, pending the results of the investigation, rather than pass into the possession of a company organized in behalf of the bondholders who have been so intimately associated with the matters under inquiry.

He also took the position that the acquisition by the holding company of the stock of applicant is subject to the provisions of paragraph (2) of section 5 of the Interstate Commerce Act. That paragraph authorizes the commission to approve the acquisition by one carrier of the control of any other carrier "either under a lease or by the purchase of stock or in any other manner not involving the consolidation of such carriers into a single system for ownership and operation."

Commissioner Campbell concurred in the views expressed by Commissioner Eastman.

THE GOVERNOR OF WISCONSIN signed a bill on July 6, making railroad tickets in Wisconsin good for 30 days from date of sale.

Derails; Are They Good or Bad?

By A. H. Rudd

Chief Signal Engineer, Pennsylvania Railroad System

THE PROPOSITION to eliminate derails in main tracks, especially at grade crossings, may at first glance appear radical, revolutionary and retrogressive; and yet many signal engineers and other operating officers who have studied results now feel that safer and, therefore, better and more economical operation and maintenance would be attained by such elimination, and that the introduction of a device which may cause an accident to prevent an accident appears, to put it mildly, somewhat illogical.

The subject is at least a fruitful one for discussion, although, as the installation of these devices is largely a matter of state regulation, results in the near future in the direction indicated are more or less problematical.

The frequent derailments at derails might be cited as arguments for their retention, and as proofs of the danger resulting from their removal; and yet some roads which do not have derails in their main tracks not only escape these accidents but do not have the collisions which derails are supposed to prevent.

It would appear that the sentiment is quite general that "our men are so careful we do not need derails, but we are afraid of what the *other fellow* may do"; and the other fellow feels the same way. Those who admit that they need derails to enforce their own discipline are few and far between—it is the "other fellow." Put yourself in the other fellow's place and what becomes of the derail? It stays in, because the third party in the case, the arbiters, as represented by the public service commissions, feel "We might not be able to rely on either or any of you."

On the one hand we have the actual derailments, on the other, occasional collisions. Unquestionably there are many more derailments than collisions, but the answers to the questions "*Did* the derail prevent a collision?" or "*Would* a derail *have* prevented the collision?" must be, in a very large number of cases, more or less conjectural. For this reason, comprehensive comparative statistics have never, as far as the writer knows, been compiled; and obviously they are inherently difficult of compilation.

Does the derail tend to better observance of signals? Is it a "moral agent" as some claim, or an immoral one? Its theoretical utility is to protect the careful from the negligent, and, in some cases, the innocent from the guilty. Does it always work out that way?

At a crossing or junction on a double-track or a four-track road, where a derailed train may foul other tracks, is it a safeguard or a menace?

It is not used or required to be used to protect crossovers in double track and four-track roads; why? Largely because of this danger of wrecking trains other than the one intended. Does experience show that its omission has resulted disastrously? Is it better to put a train down the bank if it overruns a stop signal fifty or sixty feet, or to give it 500 ft. more in which to have a chance to stop before it reaches an open draw, or a crossing?

Which signals are more frequently overrun, stop signals or stop-and-proceed signals—due allowance being made for the number of each in service? Which signals are most frequently disregarded—interlocking or block (manual, controlled manual or automatic)? Why? Are they in most cases actually disregarded and ignored, or are they, when overrun, passed only a few feet?

How many derailments at derails have occurred in the past 10 years? Count not only those which have resulted in fatalities or injuries but also those classed as minor accidents but which, nevertheless, blocked traffic and required the services of the wrecking crew. How many serious collisions

have resulted in the same period at interlocked crossovers, crossings and junctions not "protected" by derails? What is the percentage of each?

The facts noted early in this contribution—frequent derailments and the absence of accident on some roads—have led some of us to think that the derail is perhaps an *unnecessary* rather than a "necessary evil"; that at least its value is open to question, and that an unprejudiced examination may disclose some interesting facts. What are these facts?

Are reliable statistics available? If not, perhaps the *Railway Age* will attempt to collate them; not only for the information of railroad officers but also for the public authorities, so that all doubt may be removed, and we may know definitely whether the derails should be retained or removed.

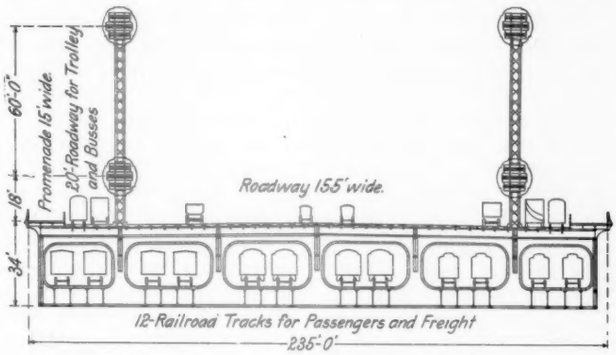
A Proposed Bridge Across the Hudson River at New York City

A PROJECT FOR THE construction of a bridge to span the Hudson river and to connect the city of New York with the mainland on the west has been receiving considerable attention recently partly because of the need of some practical means to relieve congestion around New York and partly because of the size of the contemplated structure. As the plans now stand, the bridge, if built, will be one of the largest single structures yet constructed. Originally the undertaking embraced a structure in the neighborhood of Twenty-third street and a permit was issued by the War department for a bridge at that point. Of recent years civic growth and other factors have resulted in a change in location. The plans now advanced cover a structure crossing the Hudson river from a line south of Fifty-ninth street in Manhattan to Weehawken, N. J., with terminal and classification yards in New Jersey and a union passenger station and other facilities on the New York side.

The design of the proposed bridge, which is being changed from time to time as regards some of its details, follows the general lines of typical suspension bridges. It has a river span of 3,240 ft. with approach spans of 1,710 ft. The roadway is double decked, 235 ft. wide and so arranged that the upper deck carries all highway, trolley, bus and pedestrian traffic while the lower is solely for the accommodation of railway freight and passenger traffic. On the upper deck there will be space available for 16 lines of vehicles, two bus and two trolley lines and two promenades 15 ft. wide. The lower will have 12 railway tracks in sets of two each. The clearance above mean high water will be 155 ft. at the center and 140 ft. at the towers.

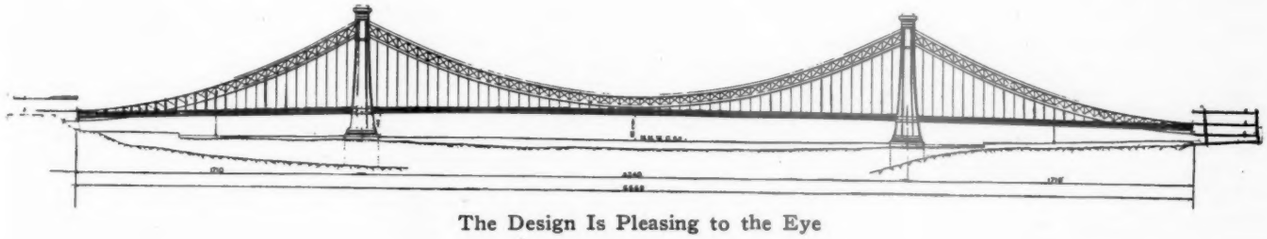
This roadway will be carried by two suspension arches spaced 160 ft. apart. In place of the usual cables, the suspension members will each consist of two parallel chords of chains, one spaced 60 ft. above the other with structural steel bracing between them. The arches will be divided longitudinally into 60-ft. panels by the suspenders from chords to deck. Each chord will be built up of three chains formed of eyebars, making a total of 12 chains for the bridge. The individual chains will be composed of from 20 to 30 eyebars of high tensile strength steel, each 60 ft. to 70 ft. long and pin-connected. In order to prevent corrosion the chords will be enclosed in a continuous gallery formed by a casing of sheet copper which will protect the chains from the weather, and at the same time permit of their inspection.

The towers supporting the suspension members will be of extraordinary size, extending about 800 to 840 ft. above water level, and 165 ft. below with foundation dimensions of approximately 400 ft. by 200 ft. The construction will be of steel and each tower will be enclosed in masonry in order to protect it from corrosion. This factor of corrosion has been carefully considered in the design of all parts of the structure and precautions have been taken in the design to render it practically negligible.



Cross Section Through the Main Span

The traffic, in so far as it concerns the railroads in their problem at the Port of New York, will be handled somewhat as follows: In New Jersey a large classification yard or perhaps a series of contiguous yards will be constructed in the Hackensack meadows as well as connecting tracks to all the railroads affected, both to the yards and to the bridge direct.



The Design Is Pleasing to the Eye

In New York the railroad tracks will be looped to the south, probably in the vicinity of Ninth avenue to a union station in the vicinity of Forty-second street. Freight tracks will continue along near the waterfront into the lower part of Manhattan Island and will be served by a comprehensive warehouse system.

Both the freight and passenger traffic will be on the basis of one-way operation. The maximum rail grade on the New Jersey approach is 1.0 per cent and on the New York approach it is 2½ per cent. The maximum grade for vehicles on approaches is 3¾ per cent while the maximum grade on the bridge itself, both rail and highway, is 2½ per cent. The estimated cost of the bridge is $100,000,000. The present estimated cost of the terminal facilities on both sides of the river is $115,000,000, making a total of $215,000,000.

The project is being developed by the Hudson River Bridge and Terminal Association, Inc., New York, of which George A. Post is president. The designs for the structure were made by Gustav Lindenthal, consulting engineer, New York, and chief engineer of the association.

I. C. C. Commodity Statistics

WASHINGTON, D. C.

THE tonnage of freight originating on the railroads of the United States during the first three months of 1921 was 217,967,619, as compared with 275,931,603 in the first quarter of 1920, according to the quarterly summary of freight commodity statistics of Class I roads issued by the Interstate Commerce Commission. This is a decrease of 21 per cent. The total revenue freight carried was 401,818,363 tons, as compared with 511,699,501 in 1920, a decrease of 27 per cent. Decreases are shown in all of the main groups of commodities but large increases are shown in the tonnage originating of some of the commodities, including several as to which there has been the most complaint that high freight rates were retarding traffic.

For the calendar year 1920 the tonnage of products of agriculture was 110,881,685, as compared with 115,033,319 in 1919. The tonnage of products of animals was 26,545,844, as compared with 35,493,662. The tonnage of mine products amounted to 712,512,968, as compared with 589,950,958, and of forest products to 101,613,209, as compared with 94,075,639. Manufactures and miscellaneous showed large increase, 251,166,994, as against 201,256,077. Carload traffic for the year was 1,202,720,700, as against 1,044,809,655. The l. c. l. merchandise was 52,984,273, as against 51,301,616, and the total tons originating were 1,255,704,973, as against 1,096,111,271.

For the first quarter of 1921 the total tonnage of products of agriculture was 26,023,087, as compared with 28,109,847 in the first quarter of 1920, but the tonnage of wheat was 4,968,196, as compared with 4,459,922. The tonnage of corn was 5,544,760, as compared with 4,325,425. The tonnage of citrus fruits was 474,947, as compared with 451,790; other fresh fruits 608,463, as against 467,580; and potatoes 1,001,832, as against 923,020.

The tonnage of products of animals was 5,900,684, as compared with 6,960,967 in 1920. Decreases are shown in all items except eggs, which amounted to 120,665 tons, as compared with 74,413, and wool, which amounted to 66,736 tons, as compared with 66,280 in 1920.

The tonnage of products of mines was 115,836,502, as compared with 143,323,954. There were decreases in all items except anthracite coal, of which the tonnage was 19,337,873, as compared with 17,304,993. The tonnage of bituminous coal was only 73,023,364, as against 90,622,687.

Products of forests amounted to 20,634,584, as compared with 25,575,364. Ties amounted to 1,950,149, as against 894,290, and pulpwood amounted to 3,182,513, as compared with 1,345,813. Manufactures and miscellaneous show a total of 39,726,611, as compared with 58,399,996.

The grand total of carload traffic for the quarter was 208,121,448, as against 262,370,128. The l. c. l. merchandise was 9,846,171, as against 13,561,475, and the grand total was 217,967,619, as against 275,931,603. The total number of carloads for the quarter was 6,224,990, as compared with 8,007,435.

Over 600,000 Employees Laid Off Between August and March

WHAT IS PROBABLY the greatest "layoff" which ever occurred in the transportation industry took place between August, 1920, and March, 1921, when, according to the statistics of the Interstate Commerce Commission, the total number of employees on the Class I railroads decreased from 2,197,824 in August, 1920, to 1,593,068 in March, 1921, representing a decrease of 604,756, or 27.5 per cent.

The accompanying table shows by classes the reductions which were made in this seven month period and the percentages of decrease. It will be noted that reductions were made in all classes of employees except general officers receiving $3,000 per annum and upward, division officers receiving $3,000 per annum and upward, traveling agents and solicitors and employees in outside agencies. The largest cuts were made in the maintenance of way departments, the figures indicating that among the employees in construction gangs and work trains, almost 71 per cent were laid off. The average cut in the number of employees directly engaged in maintenance of way work was 49.1 per cent. The significance of these figures is pointed out in an editorial elsewhere in this issue.

NUMBER OF EWPLOYEES BY CLASSES—CLASS I ROADS
August, 1920, Compared with March, 1921

	Class of employee	August, 1920*	March, 1921*	Decrease	Per cent of decrease
1	General officers, $3,000 per annum and upward	7,254	7,774	502†	6.9†
2	General officers below $3,000 per annum	1,800	1,299	501	27.8
3	Division officers, $3,000 per annum and upward	8,115	9,099	1,794†	22.1†
4	Division officers below $3,000 per annum	5,724	3,776	1,948	34.
5	Clerks, $900 per annum and upward	247,119	215,755	31,364	12.7
6	Clerks below $900 per annum	2,304	1,447	857	37.2
7	Messengers and attendants	11,788	10,174	1,609	13.7
8	Assistant engineers and draftsmen	11,020	8,979	2,041	18.5
9	M. W. & S. foremen	8,838	6,312	2,526	28.6
10	Section foremen	42,834	39,837	2,997	6.9
11	General foremen, M. E. department	1,904	1,817	87	.5
12	Gang and other foremen, M. E. department	26,009	22,245	3,764	14.4
13	Machinists	65,478	50,609	14,869	22.7
14	Boiler makers	21,020	16,184	4,836	23.0
15	Blacksmiths	11,274	7,941	3,333	29.5
16	Masons and bricklayers	1,274	577	697	54.7
17	Srtuctural iron workers	900	556	344	38.3
18	Carpenters	56,240	33,847	22,393	39.8
19	Painters and upholsterers	16,045	6,999	9,054	56.4
20	Electricians	15,678	12,702	2,976	19.0
21	Air-brakemen	8,173	6,162	2,011	24.6
22	Car inspectors	27,070	22,585	4,485	16.6
23	Car repairers	94,185	54,537	39,648	42.0
24	Other skilled laborers	62,272	45,819	16,453	26.4
25	Mechanics' helpers and apprentices	138,709	99,702	39,007	28.1
26	Section men	365,818	173,917	191,901	52.5
27	Other unskilled laborers	132,651	85,317	47,334	35.7
28	Foremen of const. gangs and work trains	1,966	942	1,001	50.9
29	Other men in const. gangs and work trains	34,549	10.058	24,491	70.9
30	Traveling agents and sclicitors	3,865	4,479	614†	16.0†
31	Employees in outside agencies	1,280	1,340	60†	4.7†
32	Other traffic employees	426	395	31	7.3
33	Train dispatchers and directors	6,289	5,561	728	11.6
34	Telegraphers, telephoners and block operators	22,374	19,704	2,670	11.9
35	Telegraphers and telephoners operating interlockers	8,230	8,105	135	1.6
36	Levermen (non-telegraphers)	4,014	3,678	336	8.4
37	Telegrapher-clerks	12,690	11,506	1,184	9.3
38	Agent-telegraphers	19,811	19,593	218	1.1
39	Station agents (non-telegraphers)	13,885	13,511	374	2.7
40	Station masters and assistants	642	553	89	1.4
41	Station service employees	127,942	94,079	33,863	26.5
42	Yardmasters	4,506	3,932	574	12.7
43	Yardmasters' assistants	3,885	2,981	904	23.3
44	Yard engineers and motormen	23,317	17,808	5,509	23.6
45	Yard firemen and helpers	23,888	18,068	5,820	24.4
46	Yard conductors (or foremen)	22,901	17,383	5,518	24.1
47	Yard brakemen (switchmen or helpers)	57,143	43,576	13,567	23.7
48	Yard switch tenders	6,540	5,998	506	7.7
49	Other yard employees	5,009	4,217	792	15.8
50	Hostlers	12,375	10,626	1,749	14.1
51	Enginehouse-men	76,587	63,216	13,371	17.5
52	Road freight engineers and motormen	34,499	27,682	6,817	19.8
53	Road freight firemen and helpers	36,951	29,564	7,387	20.0
54	Road freight conductors	28,437	22,125	6,312	22.2
55	Road freight brakemen and flagmen	70,096	56,163	13,933	19.9
56	Road passenger engineers and motormen	13,458	12,843	615	4.6
57	Road passenger firemen and helpers	12,942	12,728	214	1.6
58	Road passenger conductors	11,162	10,522	640	5.7
59	Road passenger baggagemen	5,896	5,735	161	2.7
60	Road passenger brakemen and flagmen	16,507	15,331	1,176	7.1
61	Other road train employees	3,636	3,446	190	5.2
62	Crossing flagmen and gatemen	26,399	23,191	508	1.9
63	Drawbridge operators	1,738	1,517	221	1.3
64	Floating equipment employees	11,256	10,179	1,077	9.6
65	Policemen and watchmen	13,129	11,406	1,723	13.1
66	Other transportation employees	5,700	4,284	1,426	25.0
67	All other employees	23,108	19,078	4,030	17.4
	Totals	2,197,824	1,593,068	604,756	27.5

†Indicates increase.
*Interstate Commerce Commission.

Pennsylvania Defends Employee Representation Plan

Labor Board Confronted with Problem of Ascertaining Authority Over National Agreements

REPRESENTATIVES of the Pennsylvania, appearing before the Railroad Labor Board on July 14 and 15 in defense of its procedure in conducting negotiations with its shop employees and clerks threw new light on the authority of the Board as outlined in the Transportation Act and upon the legality of the Board's various rulings regarding national agreements. The shop men on the Pennsylvania, through System Federation No. 90 of the American Federation of Labor, and the clerks through the Brotherhood of Railroad and Steamship Clerks, had protested against the plan of the Pennsylvania to negotiate new agreements as to rules and working conditions with a committee selected by a majority of the individual workers in the various classes involved.

Representatives of the employees, in opening the hearing, requested the Board to render an interpretation on:

"(a) The right under principle 15 (of Decision No. 119, abrogating national agreements) of the majority of the employees of any craft to determine what organization shall represent them.

"(b) The right of such organization to negotiate agreements for all members of such crafts through designated representatives of their own choosing without regard to whether they are in the employ of the carrier with which negotiations are to be conducted.

"(c) The right of the organization under principle 5 (of Decision 119) to select such representatives in accordance with its own laws, and without interference by the officers of the carriers."

The basis for the employees' case was that the Pennsylvania, in attempting to carry out its plan of employee representation which has been described in previous issues of the *Railway Age* and which contemplates the negotiations of agreements between the management and the employees through the agency of a committee composed of employees who have been elected by vote of the majority of the individual members from each craft, violates various of the Board's rulings and interpretations and is intended to limit and eventually destroy the existing organizations.

N. P. Good, president of Pennsylvania System Federation No. 90, and B. M. Jewell, president of the Railway Employees' Department of the American Federation of Labor, specifically charged that the Pennsylvania plan violated several of the principles which the Labor Board ruled should govern in the negotiation of new agreements as to rules and working conditions. For instance, principle No. 15, provides that "the majority of any craft or class of employees shall have the right to determine what organization shall represent such craft or class" and "such organization shall have the right to make an agreement which shall apply to all employees in such craft or class." Both contended that the Pennsylvania plan was directly contrary to this principle. The ballot which the Pennsylvania took for the election of representatives to confer on rules and working conditions was objected to on the grounds that it provides, first, for the election of individual representatives, and not organizations; second, that it ignores the organizations of employees now in existence, and, third, it provides for the division of the Pennsylvania into several regions, and the negotiations of different agreements in the several regions.

After representatives of System Federation No. 90 and of the Pennsylvania had failed to reach an agreement as to the method which should be pursued in electing representatives to confer on the question of rules and working conditions, two ballots were taken, one by the organization requesting the men to name the organization which they desired to represent them in the negotiations, and the other by the carrier requesting the men to elect representatives with whom it could confer in forming new agreements. Mr. Good stated that of a total of 37,845 votes cast in the organization ballot, 37,238 voted in favor of representation by System Federation No. 90. The employees' representatives also charged that the Pennsylvania was violating the ruling of the Board continuing national agreements indefinitely by seeking to place new rules and working conditions into effect.

E. T. Whiter Defends Pennsylvania Plan

E. T. Whiter, assistant to the vice-president in charge of personnel of the Pennsylvania, opening the carriers' case, outlined the Pennsylvania's position substantially as follows:

First, the Board has exceeded the authority given to it by the Transportation Act when it continued National Agreements in effect by Decision No. 2. The Board in Decision No. 119 admitted this contention by saying, "these agreements, by their terms, expired with Federal control." Again, in the same decision, the Board said, "Although Section 301 has not been complied with by the parties, the Board has jurisdiction of this dispute as it is and has been one likely substantially to interrupt commerce." The Board, however, cannot take jurisdiction until the provisions of Section 301 have been exhausted. Decision No. 119 was thought to recognize the unfairness and undue restrictiveness of many of the rules and working conditions and the right of the individual roads to deal directly with its own employees. However, later decisions have continued National Agreements indefinitely and taken away the right of individual negotiations.

Second. If carried out as apparently now intended, these decisions will have the effect of perpetuating the National Agreements in spite of the evident opinion of the public that these pacts be abolished and in spite of the Board's own ruling to that effect. This will mean nothing more or less than the closed shop.

Third. The Pennsylvania has endeavored to carry out its understanding of the Board's purpose, expressed in Decision No. 119, to encourage the railroads to re-establish relationships with their own employees on the basis of direct dealing, fair play and mutual understanding. The results accomplished with other classes of employees demonstrate the practicability and success of the plan offered by the Pennsylvania. However, the recent rulings of the Board tend to defeat the efforts of the carrier to reach a mutually satisfactory understanding with its employees, under which the railroad may be operated in the interest of the public as well as in the interest of the employees.

Mr. Whiter then said in part: "It must be evident to this board that while the Pennsylvania is anxious and willing to assist the Board in carrying out the Transportation Act, it cannot consistently comply with Section 301 of that Act, which requires that disputes shall be considered and, if possible, be decided in conference between the representatives designated and authorized to confer by the carriers and the employees or subordinate officials directly interested in the dispute, and at the same time carry out rulings of this Board which are so diametrically opposed to this section and to the best interests of the railroads, the public and the employees.

We share the Board's desire to avoid any interruption of traffic and to live up in letter and spirit to the mandates of the Transportation Act; that every means be taken to settle controversies that may endanger the continuous operation of the carriers. As far as the Pennsylvania is concerned, however, there is no danger of any substantial interruption of transportation. Railroad employees who prior to federal control lived harmoniously with their employers over a long period of years on the basis of just such relationship as we are re-establishing with our men, do not strike without just cause. The Pennsylvania has always treated its men fairly. There will be no interruption of traffic under such circumstances and harmonious relations will be re-established if this Board in its desire to avoid misunderstanding does not interfere with honest efforts of the railroads to get together and continue to live together with their own men."

E. H. Seneff Testifies on Authority of Labor Board Over National Agreements

E. H. Seneff, general solicitor of the Pennsylvania, followed with an argument in regard to the jurisdiction of the Labor Board over the question of National Agreements. Mr. Seneff's arguments were in general similar to those outlined in Mr. Whiter's remarks with a more extended analysis of the authority given to the Labor Board by the Transportation Act and the manner in which that authority has been used in the controversy over National Agreements. Mr. Seneff pointed out that the Labor Board, in the first place, had no power to continue National Agreements in its Decision No. 2, and that inasmuch as a bona-fide dispute over National Agreements has never been created, none of the subsequent orders of the Labor Board in regard to the abrogation or continuation of these agreements is legally rendered. Furthermore, Mr. Seneff pointed out, even had the Labor Board acquired jurisdiction over the question of National Agreements, its action in retaining jurisdiction indefinitely, deciding, first, on April 14 that National Agreements would terminate on July 1, and then deciding without a hearing on June 27 that they would not terminate, would still be beyond the power given to the Board under the terms of the Transportation Act. Assuming again that the Board had complete jurisdiction over the question of National Agreements, Mr. Seneff challenged its right or power to lay down principles to be observed by employer and employee in the making of contracts, as the Board did in Decision No. 119. Regarding these principles, Mr. Seneff said, "I am unable to find a word or syllable in the Transportation Act conferring any such power upon the Board. The Board in prescribing these 16 principles has undertaken to legislate respecting property rights and obligations of the carrier and employee, and no such power has been delegated to the Board by Congress. Even though such power had been delegated by Congress, it would not be constitutional, as the exercise of any power compelling the carrier and the employee to observe substantive principles in the adjustment of differences between them in the making of contracts amounts to an appropriation of property rights which cannot be taken away from either in this manner without infringement upon their constitutional rights. Congress never intended that the Labor Board should usurp the rights and obligations of the contracting parties in this way, but on the other hand, it was the obvious intention of Congress that the parties directly interested in the matter be free and untrammeled to deal with each other in any way they see fit, regardless of locality or territory and likewise regardless of majority or minority representation, until a dispute which cannot be settled in conference arises, and then the Board has a right to function."

In closing, Mr. Seneff said, "There is one thing more to which I desire to direct the Board's attention, and that is the apparent growing tendency on the part of the Board, as I view it, to group the carriers as a whole and subject them to the same treatment regardless of different or varying conditions. It is apparent to me that Congress had in mind in the enactment of the Transportation Act controversies between individual carriers and their employees, and if that is so it is the legal duty of the Board to carry out that direction to the fullest extent."

Officers and Employees Testify In Behalf of the Pennsylvania

J. T. Wallis, chief of motive power of the Pennsylvania, then outlined the development of the closed shop during and after federal control, and pointed out the probable effect of the Board's position, as expressed in its orders, on the extension of this principle, saying: "We believe that it is but a step from the closed shop and union domination in Interpretation No. 5 (of Decision No. 119—the recent ruling in the Pullman case), to union domination for the railroads as a whole and to uniform national agreements, national boards of adjustment and those things denied labor organizations when the Anderson amendment was rejected. We believe it because we have all seen what happened during government control, and we think that your action and recent decisions are so nearly in conformity with what happened during federal control that they cannot but produce a like result."

Mr. Wallis was followed by H. A. Enochs, superintendent of the wage bureau, eastern region of the Pennsylvania, who outlined in detail the steps which that carrier has taken to carry out the provisions of Decision No. 119. Mr. Enochs, in turn, was followed by E. Peterman, a blacksmith in the Altoona shop. Mr. Peterman outlined the conditions existing at Altoona, the detrimental effect of the attempt of labor leaders to establish a closed shop and the manner in which the company had conducted its balloting for representatives with whom it could negotiate new agreements.

In reply to inquiries by members of the Board, Mr. Whiter later stated that of the 185,000 employees on the Pennsylvania, 167,100 were involved in this controversy. Of the 167,100, Mr. Whiter said, 108,254 have either agreed to working conditions or are negotiating through their duly elected representatives at the present time. In discussing the agreement which has been reached at the Altoona shops, Mr. Whiter later informed the Board that the total number of employees eligible to vote at that point was 2,198, and that 1,320 employees participated in the election of committeemen with whom the carrier had negotiated a new agreement.

Mr. Whiter closed the Pennsylvania's case with the following remarks:

"You have heard our case. You have been told freely of our aims and our methods of procedure and what we hope to accomplish. You have been told of our success in negotiating with those of our employees who were willing and did meet us half way. You have been told of our success at Altoona works where a majority of the shop crafts voted for their representatives who in turn completed their schedule in conferences with the Company's representatives and put it into full force and effect July 1, 1921.

"We propose to continue negotiations with those representatives who were duly elected by those who exercised the right to vote and will put into effect the schedules as soon as they are completed, and agreed to, and of which you will be currently advised."

Representatives of the Brotherhood of Railway and Steamship Clerks, Freight Handlers and Station Employees, presented similar arguments on behalf of the clerks on the Pennsylvania, B. R. Briceland declaring that the carrier had refused to negotiate with the brotherhood and to recognize the brotherhood as representing the majority of the workers of this class.

As a sequel to the meeting of the various labor leaders and general chairmen at Chicago last week, the developments at

which were described in last week's *Railway Age*, the Railway Employees Department of the American Federation of Labor issued a warning in the form of a circular to the members of the shop craft union to "so conduct yourselves that you will not become involved in a stoppage of work." The letter stated that no action should be taken without authority of the Railway Employees Department "pending the time when the standard recognized railroad labor organizations can arrive at a point of handling this question, where concerted action by all may be taken." A "constitutional majority" for the rejection of the recent wage cut was also announced in the circular.

Several orders have been announced during the past week by the Labor Board, among them three interpretations to Decision No. 2. One of them increases the daily guarantee for engineers and firemen from $6.00 and $4.25 respectively to $6.80 for engineers and $5.05 for firemen. Another interpretation applies the increase of 13 cents per hour specified in Article 12 of Decision No. 2, to labor foremen in shops and engine houses whose duties consist of supervising engine wipers, laborers, tool checkers, headlight men, fire tenders, turntable operators and similar positions. These men will receive a monthly increase of not less than $26.52 per month.

The wages of the employees of the American Railway Express Company, except those employed in shop work, will be reduced six cents an hour on August 1, according to an order of the Labor Board, announced on July 12. It is estimated that the saving to the company will approximate $8,000,000 annually. Last July the wages of employees of the American Railway Express Company were increased 16 cents per hour, and their present rates will therefore be 10 cents per hour larger than they were prior to that time.

How the New York Central Inspects Perishables

Loss and Damage Guarded Against by Inspection Service at Points of Origin and Terminals

By F. S. Welsh
Manager Stock Yards and Agriculture, New York Central Lines

THE INSPECTION service which the New York Central Lines conducts in handling perishable commodities has a two-fold purpose. Its immediate object is to determine the exact condition of the perishables transported, while its ultimate end is the collection and dissemination of information concerning causes and means of correcting damage to these perishable shipments.

To accomplish the purpose of the work, as it has been outlined it is necessary to know the condition of the various commodities when they are offered for shipment. Our first procedure, consequently, is to maintain a detailed inspection service at the various shipping points. This inspection includes a thorough examination of the mechanical condition and equipment of the car. The arrangement of the load in the car must be carefully looked over with an eye for such physical defects as salty floors, collapsed bunkers, improperly fitted doors and any other conditions which might damage the commodity to be transported. The descriptions which our inspectors turn in as to the condition of the load include notations concerning the stripping and stowing, as well as descriptions of the containers being used. Other facts noted, pertain to the presence or absence of false floors, the size and construction of the car, together with mention of whatever additional protection is afforded, as for instance, when paper is used on the floor, sides and ends to guard against freezing. The type of the load is also sized up and mentioned in the report; that is to say, the inspector determines whether it is a vertical or an offset load and whether it is spaced or not. Mention is also made of the number and approximate dimensions of the channels left in the car for the circulation of air, together with their comparative regularity.

In describing the contents of the car, our men note the variety of the commodity, its quality, color, size, pack and general condition. To illustrate, we base the condition of the pack on the height of the cover of the container above the contents, and this is described as high, medium, flat or slack. When the commodity in question is fruit, its degree of ripeness is classified either as hard green, green, hard ripe, ripe, soft ripe, over-ripe, or decay. When the degree of ripeness is noted as past ripe, bruising occurs rapidly and the tendency toward this condition is also reported.

Qualifications for an Inspector

From the nature of the information required by this sort of inspection, a conclusion can be drawn as to the qualifications necessary for a competent inspector. We prefer men who have had actual experience in growing and shipping perishable produce, supplemented by a four year course in an agricultural college where opportunity has been given for studying plant pathology.

In conducting inspections at points of origin, we take into consideration the amount of territory which can be covered profitably by the individual inspector. We also determine the percentage of the total number of shipments which must be inspected in order to give us a comprehensive knowledge of the condition in which commodities are offered for shipment at any particular station or in any particular region. It is desirable, of course, that the cost of inspection per car be kept as low as possible. To accomplish this end and to increase the scope of each inspector's activities, we have divided our territory with reference to convenient highways and other transportation facilities, and in addition we have provided our inspectors with automobiles to enable them to cover the maximum number of shipping points. Our inspectors keep in close touch with the agent at each station, and are instructed to pay particular attention to those points at which commodities are frequently offered for transportation in bad condition. They also co-operate with shippers who are experiencing difficulty in loading their products. It is found that the moral effect of the presence of the inspector or the possibility of his appearance at any point without advance information as to his arrival, is very good.

Number of Shipments Inspected Varies

The percentage of the total number of shipments which can be thus inspected at points of origin varies greatly with the territory and the variety of the commodity. Inspections made at the time of the peach movement in western New York last fall amounted to about 3,500 cars, or approximately 85 per cent of the total shipments. Given this detailed knowledge of the condition of the various commodities offered for shipment, the carrier's liability and the factors affecting the commodity while en route can be determined within a fairly

definite limit, provided the exact condition of the commodity is also reported upon its arrival at destination. The inspectors stationed at the principal receiving terminals have the same general qualifications as our inspectors at points of origin. Their duty is to make a complete record of each carload of perishables received. These reports generally are of two kinds: (1) The line-a-car report, which secures data as to the general condition of the car, and which is made after a more or less cursory examination, usually from the car doorway, (2) The detailed report which is made after a thorough inspection of the car. In addition to this close examination, the inspector notes all factors mentioned in the report from the point of origin, and the amount of damage to the load, if there is any, together with its location and probable causes. To illustrate, take the case of injury to potatoes caused by freezing. If potatoes thus injured are distributed throughout the load and are interspersed with unfrozen specimens, it is a clear indication that the injury occurred before the shipment was loaded. On the other hand, if most of the damaged potatoes are along the floor, the side walls or at one end of the bunkers, we know that the injury has been received in transit. Terminal inspectors make these detailed reports only upon request of the consignee or in the event that the line-a-car examination reveals extensive damage to the contents. The consignees of damaged shipments request these inspections at all of our terminals since notations concerning the damage existing are not made on paid freight bills unless the detailed examination has been called for. Without a damage notation on his paid freight bill, the consignee has no acknowledgment from the carrier of the existence of damage in the event that he presents a claim. We frequently make joint inspections with consignees, and the information thus obtained is not only reported and recorded in a track book, but is supplemented by photographs.

Full Use Made of Information

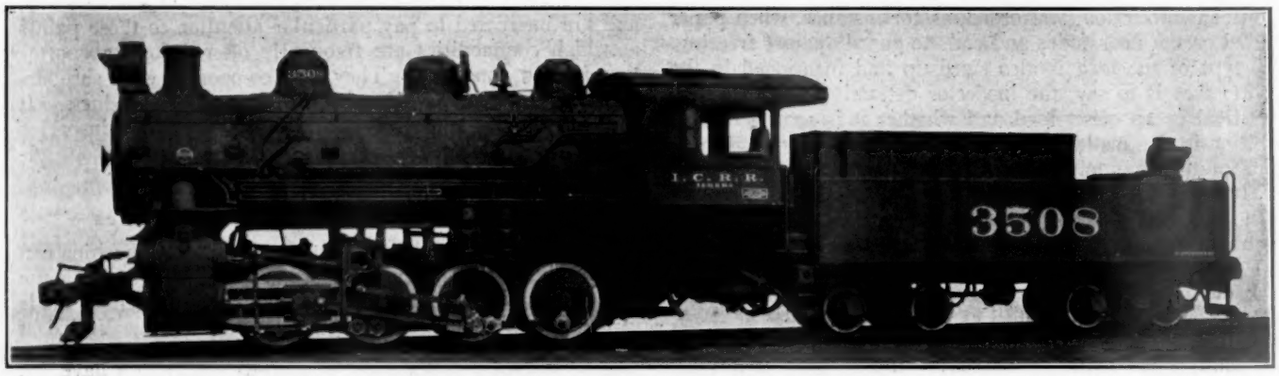
Once having collected this information as to the condition of commodities offered for shipment and received at destination, it becomes necessary for us to centralize the data and classify it in order to determine the causes for damage and the means of remedying them. To accomplish this end each inspector reviews his reports weekly and sends a written summary to the central office. This summary, stating the number of inspections and the variety of the commodities, makes clear the principal causes and the extent of all damage, and any unusual features which may have been noticed. From these weekly statements, supplemented by copies of the inspection reports themselves which are called for from time to time, we find it possible to classify causes for damage to perishables into three general groups as follows: (a) Bad practices in the preparation of commodities for shipment. (b) Improper loading practices. (c) Faulty refrigeration.

In attempting to correct cases of faulty individual practices, we find it advisable to take the matter up with the shipper or consignee responsible, either by mail or through a personal call from one of our inspectors. If the trouble is occasioned by improper methods of loading, we try to persuade the shipper to adopt methods that have been proved efficient by experience. This we accomplish by means of blueprints and actual demonstrations by our inspectors of the best means for preparing shipments for loading. On the other hand, if the damage is due to faulty containers, we take it up not only with the shippers but also with the package manufacturers. In some instances it has been found possible to devise an entirely new container where the old one has been found unsatisfactory. This is true in the case of the New York celery crate which we found too large to afford proper refrigeration of the celery in storage, and too weak to hold together during transportation with the large amount of celery which it contained. A smaller size package has been designed and is proving so popular with a large majority of New York shippers that it is rapidly replacing the old crate. In this instance, too, we found the package manufacturers anxious to co-operate in every way.

When damage is caused by general field conditions, such as the prevalence of brown rot in peaches, we issue circulars and instruct all our inspectors to make organized efforts, urging that particular attention be paid to removing this trouble in the packing houses. In other instances if a change in the entire method of loading is necessary, we prepare blueprints and illustrations in circular form for distribution throughout a given region. Where damage is caused by improper refrigeration, the matter is reported to the supervisor of refrigeration who in turn issues orders to the particular icing station or officer responsible.

Satisfactory Results Obtained

The results of this inspection service on the New York Central Lines have been very satisfactory from our standpoint, and there is every indication that the service is meeting with approval from shippers and consignees. In the first place, there has been an actual increase in the receipts of perishable freight at our terminals under this system. Secondly, the reliable consignees and shippers are co-operating heartily with our inspectors in making inspections at destination. As an evidence of their attitude, one of the principal receivers at a large terminal, in filing claims for damage, has simply presented these to our claim agent with the request that he be allowed whatever damage was shown by the inspector's report.



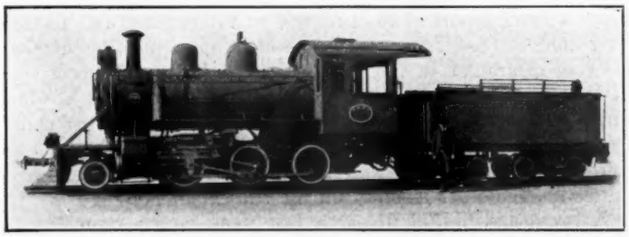
New Eight-Wheel Switcher for the Illinois Central

Twenty-five of these engines have recently been delivered by the Baldwin Locomotive Works. They resemble closely the N. I. R. A. design but have increased grate area and firebox heating surface. The total weight in working order is 221,700 lb., tractive effort 51,000 lb., evaporative heating surface 2,782 sq. ft., and superheating surface 658 sq. ft.

Locomotives for Federated Malay States Railways

Prompt Delivery and Success of Previous Shipment Secures Additional Order for American Builders

THE FEDERATED Malay States Railways during the four years of the war, deferred placing even the most essential orders for locomotives and rolling stock because of the enormous demand for such equipment by the allied governments for military transportation purposes. However, at the termination of the war, these railways had so expanded and passenger and freight traffic had so increased that it was necessary to secure as much additional motive power as possible with a minimum delay.



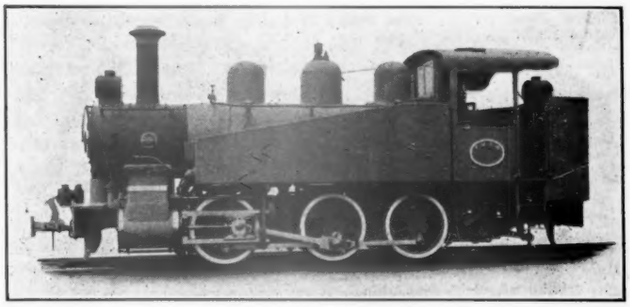
Mogul Freight Locomotive

The Federated Malay States Railways own and operate over 1,000 miles of meter gage track. The main line runs practically the length of the Malay peninsula, connecting Bangkok and Singapore. From this main line are various branch lines for local passenger and freight service. The motive power consists of 202 steam locomotives of various types. For the accommodation of passengers, 560 coaches are used and for the handling of freight, 4,154 cars. In addition a marine service is operated consisting of steamboats, tugs and ferries, supplemented by the railways' own harbors, docks and wharves.

As the traffic on these railways was so materially augmented during and after the war, an order was placed with the Baldwin Locomotive Works for 12 Pacific (4-6-2) type locomotives for combined passenger and freight service. These locomotives, which were built and delivered in 1919, had 17 in. cylinders with 24 in. stroke, operated by 8 in. piston valves actuated by Walschaert valve gear. They weighed 177,600 lb., including the tender fully loaded, and were equipped with American superheaters.

These, first American locomotives placed in service in the Malay States, gave such satisfaction that in September, 1920, the railways supplemented their previous order by 20 more engines of two distinct types. This order consisted of 10 Mogul (2-6-0) type locomotives for freight service and 10 six-coupled side tank locomotives (0-6-0) for switching and general freight service.

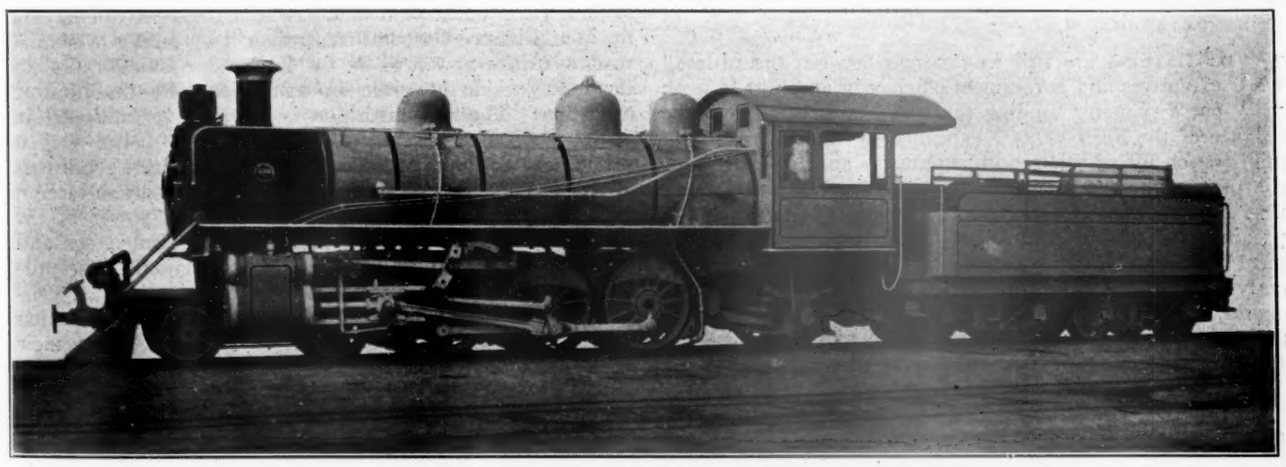
After being inspected by a representative of Messrs. Rendel, Palmer and Tritton, London, the locomotives, which were built in 58 working days, were shipped on April 23, 1921.



Tank Locomotive for Switching

The contract for the 20 engines mentioned was placed in this country on account of the rapid delivery which could be obtained and also because of the excellent service rendered by the previous order of 12 Pacific (4-6-2) type engines. Due to existing conditions in England and based on statistics obtained from recent deliveries made by British locomotive manufacturers, it would appear that the delay between the receipt of an order and the actual date of delivery is of considerable length.

The locomotives are of the most up-to-date type and have open bar steel frames. American outside equalized steam brakes are applied to all the driving wheels and automatic vacuum brakes to all the tender wheels, with train connections



Pacific Type Locomotive for Federated Malay State Railways

at the front of the engine and at the back of the tender. These vacuum brakes are designed to interchange and operate with the railways' standard Gresham and Craven system. Hand brakes are applied on the driving wheels of the tank locomotives and the tender wheels of the Pacifics and Moguls.

These locomotives were designed to operate on rails of 3 ft. 3⅜ in. gage, 2½ per cent grade, and over curves of a radius of 16 deg. The weights and principal dimensions are shown in the accompanying tabulation.

	Pacific Type 4-6-2	Mogul Type 2-6-0	Tank Type 0-6-0
Tractive effort	18,560 lb.	12,970 lb.	16,580 lb.
Gage	3 ft. 3⅛ in.	3 ft 3⅛ in.	3 ft 3⅛ in.
Cylinders	17 in. by 24 in.	14 in. by 18 in.	16 in. by 20 in.
Valves	Piston type	Balance Slide	Balance Slide
Boiler:			
Type	Straight Top	Straight Top	Straight Top
Diameter	56 in.	52 in.	44 in.
Working pressure	170 lb.	160 lb.	160 lb.
Firebox:			
Material	Steel	Steel	Steel
Staying	Radial	Radial	Radial
Length	66⅞ in.	69⅞ in.	64⅞ in.
Width	54¼ in	27¼ in.	27 in.
Grate area	24.9 sq. ft.	13.1 sq. ft.	12 sq. ft.
Tubes	2 in. steel	2 in. steel	2 in. steel
Heating surface:			
Firebox	99 sq. ft.	88 sq. ft.	59 sq. ft.
Tubes	1,295 sq. ft.	674 sq. ft.	499 sq. ft.
Total	1,403 sq. ft.	762 sq. ft.	558 sq. ft.
Wheels:			
Driving diameter over tires	54 in.	37 in.	42 in.
Driving diameter of center	48½ in.	31½ in.	36½ in.
Journals, main	7½ in. by 8 in.	6 in. by 7 in.	7 in. by 7 in.
Journals, other	7 in. by 8 in.	6 in. by 7 in.	7 in. by 7 in.
Wheel Base:			
Base, driving	9 ft. 6 in.	9 ft. 8 in.	10 ft. 0 in.
Base, total engine	27 ft. 0 in.	15 ft. 11 in.	10 ft. 0 in.
Base, total engine and tender	50 ft. 0¾ in.	39 ft. 3 in.	
Weight:			
On driving wheels	67,400 lb.	52,000 lb.	78,000 lb.
On truck, front	27,000 lb.	10,000 lb.	.....
On truck, back	19,000 lb.	.....	.....
Total engine	114,800 lb.	62,000 lb.	78,000 lb.
Total engine and tender	177,600 lb.	109,000 lb.	.....
Tender:			
Water capacity	2,400 U. S. gal.	2,200 U. S. gal.	1,200 U. S. gal.
Fuel capaciyt	5 tons	2 cords	2 tons

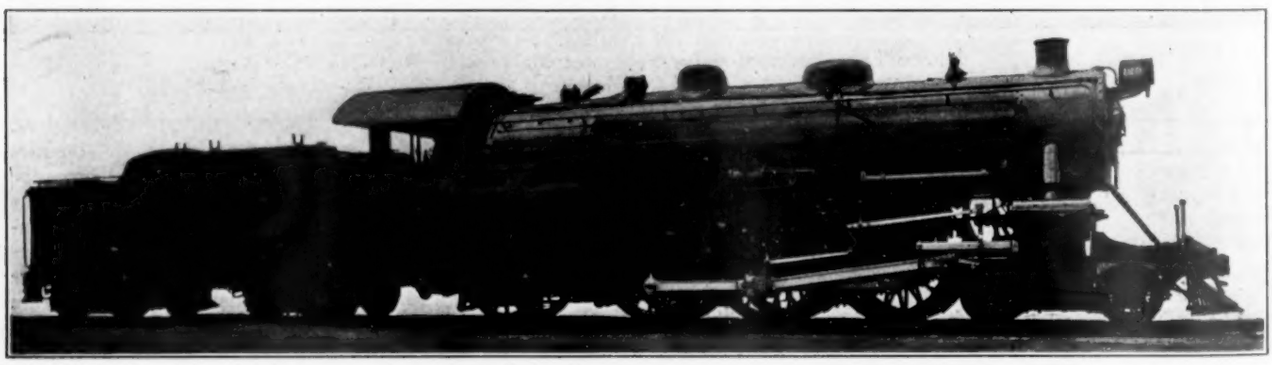
Negotiations for Settlement of Government Accounts

WASHINGTON, D. C.

NEGOTIATIONS are still in progress between the railroad executives and government officials in an effort to work out a plan for funding for 10 years at 6 per cent the balance of the $750,000,000 expended by the Railroad Administration for additions and betterments and for expediting the payment to the railroads of the government's indebtedness to them for the federal control period. The figure of approximately $500,000,000 to be paid to the roads in settlement is frequently used by the government officers and apparently it is their desire to induce the railroads to abate their claims, particularly those for undermaintenance, to some such amount, which probably represents something like the Railroad Administration's own estimate of what it owes the railroads, using its own theory of its maintenance obligation. Apparently the government is exerting considerable pressure upon the roads to induce them to accept a much lower figure than they claim in return for an agreement to fund their debt by accepting 6 per cent securities for it.

Secretaries Hoover and Mellon are taking an active part in conferences with the committee representing the Association of Railway Executives in an effort to reach a compromise on the claims and numerous other conferences have been held between the two cabinet officers, J. E. Davis, director general of the Railroad Administration; E. E. Clark, chairman of the Interstate Commerce Commission, and Eugene Meyer, Jr., managing director of the War Finance Corporation, to discuss the entire subject and particularly ways and means for raising the necessary cash if a plan of prompt settlement is agreed upon. Messrs. Mellon, Hoover, Davis and Clark made a brief report of the progress of the negotiations to the President on Saturday, July 9, following a meeting of the steering committee of the Association of Railway Executives in Washington the day before, but it was stated that no definite conclusion had yet been reached and that another conference would be held with the executives. There was such a conference on Monday and on Tuesday the steering committee held another meeting on the subject in New York.

A press association dispatch last week which represented the Secretary of the Treasury as having announced that a plan for a settlement for approximately $500,000,000 had been practically completed seems to have had no more foundation than a statement that negotiations were in progress. The administration is willing to accept railroad securities for the indebtedness of the roads on account of capital expenditures, but as that would increase the amounts which must be paid to effect a cash settlement of the accounts on the other side, it is desirous of an assurance that the claims of the roads will be reduced to a figure which the government considers reasonable and which it feels it can pay under present conditions. Approximately $200,000,000 is available to the credit of the Railroad Administration and the balance to be paid would require an appropriation by Congress unless it is found possible to carry out a plan that has been discussed for having the War Finance Corporation furnish it by taking over railroad securities now held by the Railroad Administration or the new ones to be given in connection with the funding operation. The administration is particularly interested in bringing about a settlement because of the belief that it would have an important effect on general business conditions to enable the railroads, which normally represent so large a proportion of the purchasing and employing power of the country, to pay their bills and undertake maintenance and other work that would put money into circulation. The railroads are anxious to effect a settlement, but they are confronted with a demand that they sacrifice a large proportion of their undermaintenance claims in order to obtain their money without litigation.



One of Five New Pacifics Built by the Philadelphia & Reading in the Company Shops

How Sincerely Do Railroads Want College Men?

Roads Should "Establish a 'Look to the Future' Policy of Recruiting and Training"

By F. E. Hanson

IN MARION B. RICHARDSON'S LETTER appearing in the *Railway Age* of June 17, it is stated:

(1) That letters received from railway officials on the subject of whether or not the railroads want college men state "that the college man does not come up to expectations in most cases and that railroad work requires men of certain temperament and qualifications."

(2) That one letter in particular stated, "that the railroads wanted students who had received good grades in their studies and had also taken an active part in athletics and campus activities."

From these letters Mr. Richardson states, "It appears that the railroads must have the highest grade of material available," and he suggests a means of establishing relations between the railroads and college students whereby the students will know what the railroads want and the railroads will be able to get the material which they desire or need.

Poor Recruiting Methods

In regard to the statement that "the college man does not come up to expectations in most cases." Just consider the method followed by most railroads in recruiting for their technical or engineering departments. It is done very much as the recruiting for the other and non-technical departments is done; namely, consideration is given, except in isolated cases, only to the qualifications necessary for the particular vacancy to be filled. For the lower grades of railway engineering departments a technical education is not essential to the satisfactory performance of the duties required; consequently these grades are for the most part recruited from such bright appearing young men as happen to apply when there are vacancies for rodmen or chainmen. If a college man happens along at the time and is willing to accept the pay offered, he is likely to be given preference over the non-college man but there is no definite effort on the part of the railroads, as a whole, to get the technically trained man who will be able intelligently, as well as satisfactorily, to perform the work, nor are there any special inducements held out to him if he accepts a position under the system.

To this recruiting system, and to the fact that until very recently the railroads have paid less for the lower grades of technical workers than have other employers, can, I believe, be accredited the fact, if it is a fact, "that the college man does not come up to expectations in most cases and that railroad work requires men of certain temperatment and qualifications." Under the system only those men with the temperament and qualification enabling them to forget that they have spent considerable time, at some cost, in obtaining a technical education, to "stick around" in the same grades with the non-college men who are obtaining their education at the expense of the railroad and through the helpfulness of their college brothers with no special opportunity offered them for using the education, will stay in railroad work. Those not having this temperament and qualification seek employment elsewhere where the fact that their technical knowledge is an asset is recognized from the beginning.

Of those college recruits who are left, after their number is depleted by the above process, there is required, in the face of an apparent lack of any regular system of promotion in grade or advancement in pay, a "certain (super) temperament and qualification" to keep from "going stale" and taking the attitude of "Let George do it." Those men having this super temperament and qualification are probably the ones that would be recognized in the letters referred to as outside the classification of "Most cases."

A "Looking to the Future" Policy

In regard to that part of the letter stating that "the railroad wanted students who had received good grades in their studies and had also taken an active part in athletics and campus activities." The letter must have been written by an official of some one of the few railroads which employs a recruiting system looking to the future rather than one which functions only to fill present vacancies. There are some railroads employing such a system as a corporation policy and there are others where the system is temporarily in force through the foresight of the head of the department or sub-department using it. At the present scale of pay there is no reason, from the standpoint of available supply, why all railroads should not adopt this "looking to the future policy" of recruiting to the lower grades of their technical departments. If this policy should be adopted, I think it safe to say that any foundation of fact for the statement that "the college man does not come up to expectations in most cases" would be removed and that the morale of the engineering departments of these railroads would be greatly improved, would be far more efficient and would consequently be operated at less expense to the railroads.

I do not wish to imply that there is no place in railway engineering departments for the non-college man. Deserving men or boys who desire to obtain a technical education and follow a chosen vocation by practical training, together with personal application and study, should be given every opportunity, but they should not be employed at the start at the same scale of pay as the college man nor should they be advanced in pay or grade until they have completely passed both mental and practical tests indicating that they are qualified in the fundamental principles on which engineering work is based and are, therefore, equally capable from a fundamental standpoint with the college man. Moreover, any non-college man employed in this way who does not qualify within fixed time limits in different grades of fundamentals should be dismissed from service as not showing the proper initiative and desire to master the technical principles of the profession or calling which he seeks to follow. By this means only could the morale and quality of an organization employing a "look to the future" policy of recruiting be kept to the standard which such a policy implies.

Training the College Man

As to Mr. Richardson's suggested solutions whereby the conditions complained of could be remedied and the railroads could get properly qualified men: There can be no criticism of the first two suggestions, but in regard to his third and last one there is some doubt. Any man who can successfully complete the courses in a technical institution of high standing cannot help but assimilate all of the theoretical knowledge which is essential to railway engineering work. There may be isolated positions for which the railroads require men of exceptionally high theoretical ability, but they are so few in number and require such specialized

practical training that they cannot be properly considered in a general discussion of Mr. Richardson's question.

Some years ago one of our large middle western systems adopted a policy of annually employing a limited number of college men for its engineering departments. These men were first assigned to section crews where they were called upon to do regular section-hand work for a period of two to three months. The section foreman was under instructions to teach them the practical principles of track work and the roadmaster to watch them and observe their progress. Could any better method be devised whereby the railroads might be assured of getting men of the required calibre; could any better method be adopted to teach the recruit what constitutes track maintenance, or could there be any doubt concerning a man who successfully completed this part of the training, at section-hand pay, as to whether he knew what constitutes a day's work for a day's pay?

When this period was completed the men were assigned to various minor positions with a view to giving them an opportunity to learn something of the work in the different departments and sub-departments of railway engineering; they served an apprenticeship in practical work, not becoming experts in all branches to be sure, but becoming sufficiently well acquainted with the work of different sub-departments to make them more valuable to the department or sub-department to which they were finally assigned than they could otherwise have been. If such a system is consistently pursued, there can be no doubt that there would result an organization in which there could seldom occur a vacancy concerning the filling of which the head of a department or sub-department need lose any sleep at night. This, it seems to me, is a system or policy which might profitably be adopted by many railroads and whereby they would be assured of the selection of men best fitted for railroad work.

How to Get College Men

As for the matter of obtaining college men for carrying out such a policy: A frank, open and honest statement of the policy would do it. Let the railroads designate an officer or employee to go before the student bodies of the colleges located in the territory traversed by their road and state their policy and method; tell the students that while they may be potential railroad presidents it will take some time and a good deal of hard work to shed the potential garb; let them know the pay that may be expected in the various grades and how slowly promotions are likely to come, particularly in the first few years;—here it would be well to have some of the professors listening in; gather a few statistics to give them an idea of the pay which they may expect in railroad work compared with that in other industries; inform them that, if they take up railroad work, their day's work will be done as to hours when it is done as to work and then tell them of some of the interesting features of railroad work.

Do this, establish a "look to the future" policy of recruiting and training, live up to the policy, and then let the college men come to the railroads. They will come, and those who stay through the test period will be such that any indictment to the effect that "the college man does not come up to expectations in most cases" will be a false indictment; railway engineering departments will be organized, and railway coaches will ride the rails just as smoothly as they have in the past and at less cost so far as engineering work is concerned.

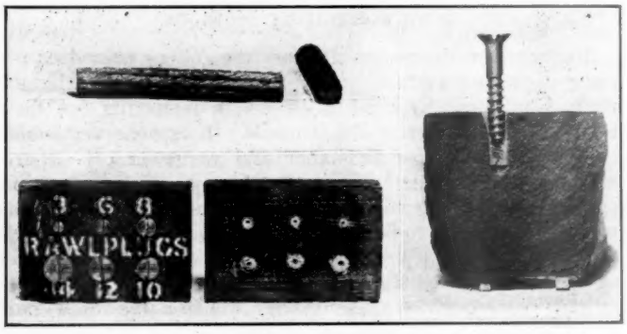
I believe that the railroads want college men; but how sincerely do they want them? Unless the desire is sufficiently sincere to be felt by those officials who direct corporation policies which department and sub-department heads must follow, it is not sufficiently sincere to alter or correct the conditions of which Mr. Richardson writes.

Making Screws Hold in Any Material

THERE HAS RECENTLY been placed on the market a device known as the Rawlplug which permits fixing an ordinary screw into any kind of material so that it will hold permanently. By its use screws may be made to hold in metal, plaster, brick, concrete, slate, glass, or in fact any rigid substance.

The Rawlplug is especially advantageous in railroad work in connection with maintenance, signal and interlocking systems and for the original installation of interior trimming and fixtures for both steel and wooden coaches. Its use solves the problem of replacing screws in repair work on the interior of cars, as an old screw can be removed and again put in place permanently in the same hole by simply inserting a Rawlplug before placing the screw. The use of Rawlplugs in metal eliminates the need for tapping and does away with tapping costs.

Rawlplugs are hollow tubes of stiffened, longitudinal strands of jute fibre, so cemented that once in place they never crumble or pulp and are unaffected by moisture or temperature changes. They are installed by first making a hole with any common drilling tool or with the Rawlplug tool in the material into which the screw is to be fixed, this hole being the proper size to receive the Rawlplug with a sliding fit. The plug is inserted into the hole and as the screw is turned home in the plug, the fibre strands expand



A Rawlplug; Several Sizes in Place, with and without Screws; Cross-section Showing Plug Expanded and Threads Cut by Screw

and enter every minute pore of the material, practically becoming an integral part of it. The screw forms a perfect thread in the fibre plug. The threads cannot be stripped but they do permit withdrawing and reinserting the screw in the usual manner whenever desired.

Tests conducted under actual working conditions showed that Rawlplugs withstood a direct pull, expressed in pounds, varying from 150 in plaster up to 600 in iron, or 1,250 in common brick for a number 14, 2 in. screw. These results were obtained by a direct pull and the plugs withstood a correspondingly greater stress in every case for an indirect pull.

Rawlplugs are made in sizes to receive all screws from number 1 to number 32 and are furnished in ½ in., ⅝ in., ¾ in., 1 in., 1½ in. and 2 in. lengths. For convenience, tools for forming holes for Rawlplugs are made in sizes to correspond with plug and screw sizes. For example, a number 8 tool makes a hole of the proper size to receive a number 8 plug and a number 8 screw. Any type of drill may be used, however, for making the holes to receive Rawlplugs.

Rawlplugs are packed in boxes of 100 plugs of any one or assorted sizes. There are also various complete kits which include plugs, screws and tools. This product is manufactured by the Rawlplug Company, New York, which is represented in the railroad field by the Universal Packing & Service Company, Chicago.

General News Department

The Railway Equipment Manufacturers' Association has decided on account of present business conditions not to hold a convention this September.

The Railway Claim Agents Association of Texas, embracing membership from the states of Louisiana, Arkansas, Oklahoma and Texas, will hold its ninth annual convention at El Paso, Tex., from July 14 to 16, inclusive.

Express Messenger Frank Beckman was shot and his safe was rifled, when two robbers attacked him in his car on Big Four passenger train No. 44 near Covington, Ind., on July 1, about 2 a. m. The robbers jumped off when the train slackened speed in passing through Vedersburg. Reports say the only valuables stolen were non-negotiable securities.

N.R.A.A.-A.R.E.A. Meetings Moved Ahead One Week

Owing to inability to make the necessary arrangements for accommodations at the Coliseum, the National Railway Appliances Association has changed the date for its annual exhibition of railway engineering and maintenance of way equipment from March 20-23, 1922, inclusive to March 13-16, 1922, inclusive. The American Railway Engineering Association is contemplating a similar change in the date of its convention so that they will meet on March 14-16, inclusive.

Traveling Engineers' Convention Postponed

The Executive Committee of the Traveling Engineers' Association has announced that the annual convention, scheduled to be held at the Hotel Sherman, Chicago, on September 6-9, 1921, has been deferred. There will be a business meeting instead at the same hotel, commencing Tuesday, September 6, at which reports on the following subjects will be considered: Distribution of Power and Its Effect on Operating Costs; Recommended Practice for Conservation of Locomotive Appurtenances and Supplies; What Are the Advantages of Self-Adjusting Wedges, the Feedwater Heater and Devices for Increasing the Tractive Power of the Locomotive in Starting and at Slow Speed? The Best Method of Operating Stoker-fired Locomotives To Obtain the Greatest Efficiency at the Least Expense; A Comprehensive Standard Method of Employing, Educating and Examining Engineers and Firemen; Operation and Maintenance of Oil-burning Engines; Revision of Progressive Examination for Firemen for Promotion and New Men for Employment; Committees on Subjects, Constitution and By-laws and Arrangements. All other committees are asked to attend and be ready to submit their reports.

Passenger Traffic to Elk Convention

The Elk convention at Los Angeles, Cal., which began on July 11, furnished the Atchison, Topeka & Santa Fe and the Chicago & North Western with considerable additional passenger traffic and both of these roads figured in the special train movements both to and from the convention. The Santa Fe ran 14 special trains westbound and has to date 2 special eastbound trains scheduled. Some 2,000 passengers were carried to the convention on the special trains. The largest special train movement on this road was from Philadelphia, three trains coming from the eastern city which continued westward over the Santa Fe lines some ten minutes apart and maintaining an on-time schedule throughout the journey without mishap. Other specials handled by this road came from New York, Brooklyn, Baltimore, Pittsburgh, Washington and other points in the east and south.

The North Western had special trains from Chicago, Detroit, Mich., Indiana and Madison, Wis., with a total passenger carry of some 500, while approximately 300 passengers were carried in special cars on the regular trains. An outstanding feature of this road's business during the convention month is the number of eastbound specials which have been scheduled. The New York delegation, St. Paul, Philadelphia, Omaha, Newark-New Jersey, and the "Purple" and "White" contingents of Brooklyn will return over this road, or a total of 7 special trains, which is unique in that the return passenger travel from a convention is generally scattered and spasmodic.

Roads Urged to Purchase Coal

Chairman Cuyler of the Association of Railway Executives has written to Chairman Clark of the Interstate Commerce Commission saying that his letter urging the railroads to purchase reserve supplies of coal as early as possible was read at a meeting of the member roads of the association in New York on July 1, and the chairman was instructed to transmit it to all roads with the request that they comply with the request of the Commission in so far as it may be practicable. Mr. Cuyler said it was also ascertained that a very considerable number of roads had already made liberal purchases of coal during the present period.

Locomotive Equipment Hearings at Chicago

Hearings on the construction and repair of the locomotive equipment of the Chicago & North Western, the Chicago, Milwaukee & St. Paul, and the Chicago, Burlington & Quincy, began at Chicago before Examiner Barclay of the Interstate Commerce Commission on July 6, when the case of the North Western was taken up by the examiner. George W. Hand, assistant to the president of the North Western, when called to the stand, stated that locomotives were sent to outside shops for repair because there were nearly 375 engines out of service and the road was being offered more business than it could handle. "There was never any suspicion, intention or suggestion," said Mr. Hand, "that engines be sent out to punish employees. We tried to keep our own shop forces at par." This was the substance of the testimony of F. H. Hammill, assistant general manager of the road; Robert Quayle, general superintendent of motive power and machinery; R. M. Blackburn, general storekeeper, and F. J. Berck, general purchasing agent.

The chief witnesses introduced by M. C. List, attorney for the Interstate Commerce Commission, were John L. Rogers, mechanical engineer of the Interstate Commerce Commission, and John R. Hale, of the Bureau of Analysis of the commission, who submitted detailed charts on repair costs compiled from the records of the commission. According to Mr. Rogers' testimony, the percentage of defective locomotives of those inspected rose from 53 per cent in 1917 to 65 per cent in 1920, and that of the 83 locomotives sent to outside shops, for repair, most of the units were rated in good or fair condition. Mr. Hale's charts showed a total increased cost charged to the corporation accounts on the 83 locomotives of $857,282, which showed a large difference both as compared to the cost of repair work in other railroad shops and as compared with cost in the company's own shop. J. B. Sheean, counsel for the railroad, sought to show that this was due to difference in materials, labor and overhead costs. In closing the case for the railroad, he stated that these alleged excessive cost charges were made of tentative bills and estimates, which had not been accepted by the railroad and were, in fact, a subject of litigation.

On July 8, the Chicago, Milwaukee & St. Paul's case was called. B. B. Greer, vice-president of this road, testified that the St. Paul was obliged to send out the work because of the shortage of boiler makers and refusal of those employed to work overtime. Between October, 1919, and September, 1920, the St. Paul sent

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MAY AND FIVE MONTHS OF CALENDAR YEAR 1921

Name of road.		Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operations.	Operating income (or loss).	Net after rentals.	Increase (or decr.) comp. with last year.
			Freight.	Passenger.	Total (inc. misc.)	Maintenance of Way and structure.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.					
Alabama & Vicksburg	May	141	178,289	63,708	256,912	51,359	48,714	8,064	142,537	11,466	264,369	102.90	—7,457	—39,818	—39,445	—85,855
	5 mos.	141	963,072	297,021	1,351,012	285,977	313,589	41,446	658,564	60,442	1,372,972	101.63	—21,960	—117,039	—91,609	—351,737
Vicksburg, Shreveport & Pacific	May	171	229,944	94,896	343,869	56,470	55,974	9,141	137,876	14,292	276,458	80.40	67,411	50,737	37,382	163
	5 mos.	171	1,168,942	437,323	1,707,372	294,867	407,418	49,473	713,877	71,427	1,551,713	90.88	155,659	80,872	14,546	—402,844
Ann Arbor	May	294	339,247	47,679	405.001	62,144	96,194	6,994	176,909	17,444	359,697	88.81	45,304	24,899	15,013	74,630
	5 mos.	294	1,540,539	253,267	1,892,402	240,436	459,778	41,898	934,699	76,439	1,753,286	92.65	139,116	42,854	—11,992	274,166
Atchison, Topeka & Santa Fe	May	8,828	10,632,480	3,600,213	15,218,955	475,656	3,637,910	271,621	5,379,802	388,626	10,114,103	66.46	5,104,852	4,286,394	4,503,341	3,052,233
	5 mos.	8,828	49,408,131	19,786,141	74,349,902	10,191,887	17,685,463	1,333,918	29,504,211	1,932,384	60,456,837	81.31	13,893,065	9,655,067	9,802,349	—6,982,775
Gulf, Colorado & Santa Fe	May	1,907	2,007,222	386,852	2,453,118	25,865	569,310	43,441	773,409	78,815	1,492,268	60.83	980,850	884,660	846,548	1,143,299
	5 mos.	1,907	9,236,531	1,921,520	11,573,277	2,319,991	2,723,741	210,412	4,366,436	374,593	9,981,514	86.25	1,591,763	1,214,106	884,028	771,391
Fanhandle & Santa Fe	May	857	459,897	113,325	601,242	58,847	263,199	6,299	259,505	20,368	492,589	81.93	108,653	86,889	64,585	173,567
	5 mos.	857	2,627,145	608,353	3,395,741	637,419	1,039,544	34,620	1,338,230	113,450	3,169,925	93.35	225,816	130,437	—48,892	424,765
Atlanta & West Point	May	93	105,972	82,423	217,585	22,818	48,705	8,477	82,778	11,349	178,025	81.82	39,560	24,043	20,404	—15,631
	5 mos.	93	509,872	413,728	1,058,718	136,715	245,943	39,555	439,603	58,843	941,069	88.85	117,548	40,065	36,339	—209,444
Western of Alabama	May	133	119,000	73,583	215,033	27,787	53,581	8,310	74,575	11,341	178,858	83.18	36,174	27,374	28.516	—16,321
	5 mos.	133	534,016	371,030	1,009,713	143,973	283,587	38,777	400,919	54,884	939,322	93.03	70,391	26,388	42,867	—198,776
Atlanta, Birmingham & Atlantic	May	639	187,196	26,789	238,127	88,868	107,496	21,108	167,861	14,042	399,410	167.73	—161,283	—179,672	—182,277	—54,543
	5 mos.	639	911,131	189,842	1,228,284	396,864	499,097	108,481	906,709	78,444	1,990,178	162.03	—761,893	—853,656	—833,276	—488,686
Atlantic Coast Line	May	4,886	3,708,687	1,190,470	5,350,950	803,077	1,234,466	96,495	2,672,105	149,223	4,977,835	93.03	373,115	96,787	—68,091	528,942
	5 mos.	4,888	20,809,867	8,656,355	31,677,223	4,262,396	6,462,032	507,080	14,657,728	744,215	26,839,166	84.73	4,838,057	3,505,489	2,752,958	—242,550
Charleston & Western Carolina	May	342	216,191	43,618	271,939	52,454	57,518	7,134	144,175	8,067	279,348	102.72	—7,409	—19,714	37,448	6,402
	5 mos.	342	1,158,652	215,275	1,450,410	311,088	370,036	34,450	772,273	36,275	1,524,122	105.08	—73,712	—126,214	—169,516	—15,692
Baltimore & Ohio	May	5,184	12,128,399	2,463,606	15,722,738	1,672,182	3,394,341	277,078	7,135,865	556,355	13,165,322	83.73	2,557,416	2,004,011	1,685,449	124,853
	5 mos.	5,184	62,172,564	12,240,532	79,914,928	7,792,550	18,036,870	1,354,720	37,841,486	2,798,218	68,445,076	85.65	11,469,852	8,572,813	7,309,332	6,337,454
Baltimore & Ohio Chicago Term.	May	90	.....	.....	193,483	43,560	53,830	1,037	131,965	12,356	246,745	127.53	—53,261	—91,608	833	152,439
	5 mos.	90	.....	.....	1,013,215	151,496	216,304	7,441	709,569	73,813	1,178,054	116.27	—164,839	—347,739	136,172	397,883
Staten Island Rapid Transit	May	23	78,113	112,386	212,942	34,552	22,060	1,855	130,681	13,132	202,280	94.99	10,662	—4,181	—14,998	19,000
	5 mos.	23	425,520	471,168	981,009	169,513	159,518	8,196	642,554	66,843	1,046,624	106.69	—65,615	—130,483	—187,534	85,988
Bangor & Aroostook	May	659	440,792	69,146	533,948	122,564	158,183	6,110	176,037	20,866	489,088	91.60	44,560	12,102	22,926	—93,222
	5 mos.	659	2,804,555	424,111	3,337,177	648,715	873,526	22,895	1,181,552	108,698	2,864,136	85.83	473,041	289,708	319,750	—24,845
Belt Ry. Co. of Chicago	May	31	.....	.....	415,300	59,460	53,061	983	201,381	9,978	324,863	78.22	90,437	64,186	142,315	7,299
	5 mos.	31	.....	.....	2,046,205	211,498	268,922	5,858	1,145,689	56,332	1,688,027	82.50	358,179	235,011	671,266	—5,540
Bessemer & Lake Erie	May	225	1,099,795	38,063	1,161,199	240,605	332,900	21,658	361,649	29,788	993,082	85.52	168,117	87,082	64,968	—87,586
	5 mos.	225	3,946,837	212,058	4,266,822	952,434	2,089,996	84,049	1,755,255	154,656	5,061,756	118.63	—794,933	—945,621	—638,451	—1,916,435
Bingham & Garfield	May	35	11,958	235	12,865	21,072	3,250	909	5,357	3,672	34,269	266.37	—21,404	—28,001	—28,556	—93,259
	5 mos.	35	85,350	3,050	95,070	85,136	25,877	8,506	49,388	22,972	192,575	202.56	—97,505	—121,588	—84,286	—305,206
Boston & Maine	May	2,300	3,919,250	1,839,974	6,277,762	984,458	1,153,496	56,909	3,523,639	238,942	5,983,555	95.31	294,208	36,536	—228,430	140,989
	5 mos.	2,300	19,049,492	9,160,297	30,708,909	5,706,362	6,938,218	309,956	18,219,592	1,308,633	32,616,997	106.21	—1,908,088	—3,182,151	—4,326,017	1,779,953
Brooklyn Eastern Dist. Term	May	9	103,680	.....	109,881	4,448	21,222	488	38,507	7,647	72,312	65.81	37,569	30,656	30,656	25,416
	5 mos.	9	528,726	.....	564,964	36,284	112,140	1,443	216,777	37,178	403,823	71.48	161,141	127,282	127,382	374,137
Buffalo & Susquehanna RR	May	252	154,872	6,020	163,980	40,786	75,458	3,246	62,649	12,848	194,986	118.91	—31,006	—34,306	—3,001	—2,184
	5 mos.	252	852,664	37,980	905,198	193,258	505,280	16,079	350,124	54,270	1,119,011	123.62	—213,812	—230,312	—15,087	—67,890
Buffalo, Rochester & Pittsburgh	May	589	989,963	141,550	1,191,020	131,360	336,210	19,413	537,337	49,477	1,076,276	90.37	114,743	79,739	84,902	—27,905
	5 mos.	589	4,933,341	776,881	5,936,668	663,711	1,971,548	95,792	2,897,931	224,488	5.866,518	98.82	70,150	—105,091	302,010	136,470
Canadian Pac. Lines in Maine	May	233	109,967	30,317	157,541	73,955	29,097	3,801	82,488	3,604	192,945	122.47	—35,405	—50,405	—65,453	—2,117
	5 mos.	233	1,081,760	278,511	1,450,068	215,376	243,501	18,373	757,802	19,484	1,254,536	86.52	195,532	120,532	45,585	362,292
Carolina, Clinchfield & Ohio	May	291	545,349	44,737	601,212	67,232	119,888	21,612	176,688	20,147	405,187	67.40	196,026	165,989	206,486	27,598
	5 mos.	291	2,688,874	214,327	2,972,636	465,715	802,389	115.126	935,937	112,546	2,430,242	81.75	542,395	390,697	776,138	—142,642
Central of Georgia	May	1,913	1,172,103	437,222	1,789,189	325,168	413,340	67,117	863,283	77,377	1,752,954	97.97	36,235	42,843	—58,184	286,982
	5 mos.	1,913	5,958,094	2,377,996	9,191,251	1,589,027	2,029,187	324,307	4,451,135	395,889	8,821,681	95.98	369,570	—53,029	—55,713	—247,861
Central of New Jersey	May	685	3,150,191	783,315	4,194,258	578,761	927,536	36,266	1,834,612	105,852	3,501,978	83.49	692,280	563,504	484,118	541,435
	5 mos.	685	16,135,745	3,495,379	20,722,908	2,096,279	4,607,570	177,061	9,499,948	562,784	17,049,535	82.27	3,673,373	2,426,108	2,385,227	4,717,465
Central Vermont	May	413	417,199	93,517	558,817	170,108	170,116	12,735	346,268	21,712	722,474	129.29	—163,657	—184,634	—202,870	127,877
	5 mos.	...	1,836,030	513,255	2,553,601	470,913	721,602	59,166	1,787,102	103,032	3,149,331	123.33	—595,730	—700,370	—732,598	9,884
Chesapeake & Ohio	May	2,545	6,569,891	996,206	8,017,908	1,007,167	1,918,449	70,425	2,803,520	180,036	6,010,872	74.97	2,007,036	1,776,917	1,587,163	429,053
	5 mos.	2,542	26,717,764	4,802,131	33,318,435	4,661,321	8,670,235	338,736	13,661,610	854,955	28,318,929	84.99	4,999,506	3,842,928	3,096,567	—1,158,657
Chicago & Alton	May	1,050	1,759,459	567,421	2,455,398	379,278	557,055	49,626	978,456	56,221	2,037,620	82.99	417,778	317,962	185,826	131,070
	5 mos.	1,050	8,429,200	2,785,932	11,886,994	1,493,650	3,392,105	253,863	5,351,173	319,448	10,867,058	91.42	1,019,936	601,746	—56,560	—127,802
Chicago & Eastern Illinois	May	1,130	1,496,403	359,501	1,983,645	226,583	705,959	38,421	907,549	65,623	1,957,830	98.70	25,815	—59,449	—64,284	—72,085
	5 mos.	1,130	7,912,145	2,095,362	10,748,971	1,202,198	4,152,178	180.366	5,003,812	353,571	10,960,971	101.97	—212,000	—639,728	—474,099	—1,477,625
Chicago & North Western	May	8,402	6,794,746	2,420,525	10,365,927	2,651,429	3,075,756	141,168	5,463,494	355,109	11,762,508	113.47	—1,396,581	—2,178,491	—1,981,336	—1,406,131
	5 mos.	8,402	36,320,346	14,078,462	55,742,173	8,023,577	15,899,120	800,901	29,413,533	1,881.119	56,473,314	101.80	—7,731,168	—4,638,672	—4,461,094	—3,400,062
Chicago, Burlington & Quincy	May	9,393	9,115,082	2,469,681	12,534,931	1,824,636	2,627,527	208,517	5,024,582	382,879	10,184,025	81.25	2,350,905	1,551,404	1,754,142	2,047,916
	5 mos.	9,392	47,175,131	12,629,367	65,054,060	6,782,604	13,682,799	958,103	27,871,269	2,087,106	52,011,535	79.95	13,042,525	9,018,716	8,332,194	3,521,966
Chicago Great Western	May	1,496	1,416,396	368,390	1,934,209	277,310	409,957	66,180	846,384	59,334	1,674,981	86.60	259,228	187,850	57,541	462,865
	5 mos.	1,496	6,906,179	2,040,615	9,655,293	1,117,013	2,328,337	335,188	4,490,109	317,074	8,668,304	89.78	986,989	607,438	113,628	906,771
Chicago, Indianapolis & Louisville	May	657	816,210	312,942	1,241,420	171,525	351,476	29,026	514,297	37,656	1,118,890	90.13	122,530	56,833	—11,549	108,080
	5 mos.	655	4,145,322	1,359,275	6,026,550	661,858	1,699,021	156,940	2,615,058	184,315	5,391,228	89.46	635,322	344,120	—58,525	225,723
Chicago Junction	May	12	.....	.....	409,419	66,851	37,549	127	194,162	14,297	312,986	76.45	96,433	73,183	136,122	408,746
	5 mos.	12	.....	.....	2,042,577	290,827	214,123	808	1,009,733	73,588	1,589,080	77.80	453,497	331,952	682,326	1,223,097

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MAY AND FIVE MONTHS OF CALENDAR YEAR—CONTINUED

Name of road.		Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operations.	Operating income (or loss).	Net after rentals.	Increase (or decr.) comp. with last year.
			Freight.	Passenger.	Total (inc. misc.)	Maintenance of Way and structure.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.					
Chicago, Milwaukee & St. Paul	May	10,621	7,844,421	2,119,289	11,059,949	1,835,513	2,550,452	182,883	5,385,279	378,527	10,412,697	94.15	647,252	—105,903	—431,259	1,875,605
	5 mos.	10,615	39,109,406	10,941,019	55,416,579	6,673,281	14,858,691	881,471	29,083,601	1,997,255	53,821,204	97.12	1,595,375	—2,077,617	—3,622,814	6,653,593
Chicago, Peoria & St. Louis	May	247	106,810	22,206	140,218	26,467	46,339	4,065	98,561	13,826	189,258	154.97	—49,040	—54,696	—68,599	613
	5 mos.	247	625,846	127,650	796,030	151,898	302,145	23,742	547,669	61,729	1,087,182	136.58	—291,153	—337,505	—344,864	—107,330
Chicago, Rock Island & Pacific	May	7,662	7,178,642	2,359,632	10,189,563	1,376,892	2,542,468	172,728	4,351,375	245,599	8,739,475	85.77	1,450,089	979,274	666,448	1,527,642
	5 mos.	7,662	35,751,180	11,966,222	51,206,501	6,810,160	11,648,735	866,803	23,105,467	1,294,713	43,961,375	85.85	7,245,127	5,048,443	3,432,710	2,087,603
Chicago, Rock Island & Gulf	May	461	490,822	89,293	622,978	103,589	74,018	13,021	263,129	18,457	473,696	76.03	149,282	137,836	110,105	92,822
	5 mos.	461	2,215,610	525,084	2,922,076	451,140	408,813	66,286	1,439,268	82,228	2,454,300	83.99	467,776	400,419	270,069	—222,185
Chicago, St. Paul, Minn. & Omaha	May	1,749	1,291,273	516,037	1,926,904	380,929	542,810	35,437	1,159,064	83,570	2,216,712	115.04	—289,809	—417,017	—452,919	—500,622
	5 mos.	1,749	7,381,702	2,879,244	10,901,452	1,284,775	2,857,108	180,704	6,135,145	423,155	10,942,120	100.37	—40,669	—719,949	—921,338	—2,146,219
Chicago, Terre Haute & Southeastern	May	374	349,170	22,697	383,872	72,456	129,595	3,858	156,417	14,054	376,920	98.19	6,953	—15,547	25,464	—13,129
	5 mos.	374	1,790,554	128,023	1,988,978	325,893	811,928	29,890	867,355	65,025	2,106,145	105.89	—117,167	—223,731	—77,823	—301,881
Cincinnati, Indianapolis & Western	May	321	218,835	62,054	293,298	65,749	119,465	10,226	152,949	19,457	369,360	125.93	—76,062	—90,492	—93,113	—47,537
	5 mos.	321	1,041,879	288,190	1,408,942	266,350	468,031	58,779	777,325	110,219	1,693,219	120.18	—284,277	—361,758	—385,380	—7,244
Colorado & Southern	May	1,099	731,788	196,239	1,000,634	160,786	191,254	9,634	376,799	49,619	794,165	79.37	206,469	130,580	113,473	385,241
	5 mos.	1,099	4,106,410	923,815	5,391,869	552,169	1,342,074	57,327	1,998,008	265,922	4,249,935	78.82	1,141,933	751,578	852,147	76,216
Ft. Worth & Denver City	May	454	601,753	197,936	822,903	72,770	137,819	11,966	302,610	35,306	565,535	68.72	257,368	230,692	227,433	389,118
	5 mos.	454	3,181,657	1,052,536	4,449,401	403,604	873,924	57,172	1,708,189	189,135	3,263,302	73.34	1,186,100	1,041,660	1,086,513	1,142,193
Wichita Valley	May	255	69,323	26,295	100,439	23,813	13,073	54	46,884	2,080	85,693	85.32	14,746	9,811	2,221	58,420
	5 mos.	255	507,279	140,713	684,536	147,237	53,091	174	315,430	8,783	524,097	76.56	160,439	131,728	78,564	45,449
Cumberland Valley & Martinsburg	May	33	125,000	8,424	135,268	8,990	18,585	786	37,660	2,384	68,406	50.57	66,862	64,086	58,610	64,274
	5 mos.	33	537,300	33,633	585,061	54,273	115,993	3,597	210,901	10,302	395,066	67.53	189,995	176,115	147,782	215,029
Delaware & Hudson	May	880	3,213,574	296,543	3,691,725	414,327	926,191	42,976	1,415,014	154,891	2,972,824	80.53	718,901	639,326	701,384	842,926
	5 mos.	880	16,462,382	1,471,043	18,714,848	2,051,559	5,342,014	202,067	8,157,380	817,439	16,658,863	89.01	2,055,984	1,653,892	1,847,914	2,576,455
Delaware, Lackawanna & Western	May	997	5,402,181	1,222,657	7,294,702	1,005,049	1,723,041	117,386	2,865,653	167,639	5,932,622	81.33	1,362,080	972,079	1,040,003	1,253,110
	5 mos.	997	25,909,012	5,632,365	34,713,853	3,754,242	8,722,955	533,826	15,660,016	902,269	29,848,714	85.99	4,865,139	2,954,482	3,267,323	3,175,331
Denver & Rio Grande	May	2,593	1,764,275	470,069	2,390,573	425,667	571,719	37,606	831,577	81,986	1,992,352	83.34	398,222	248,022	320,275	—336,173
	5 mos.	2,590	9,190,238	2,338,304	12,382,259	1,550,251	3,269,892	202,036	4,538,645	423,342	10,208,203	82.44	2,174,056	1,437,493	1,769,160	—1,330,978
Denver & Salt Lake	May	255	162,530	27,143	200,428	47,859	60,578	1,155	98,391	7,151	215,133	107.34	—14,705	—22,706	—23,433	178,579
	5 mos.	255	708,231	105,524	863,172	231,445	351,015	4,707	457,436	35,447	1,080,049	125.13	—216,877	—256,994	—245,822	540,549
Detroit & Mackinac	May	374	132,350	29,780	170,364	25,696	49,281	2,491	65,427	6,807	149,699	87.87	20,664	—3,111	—1,949	22,170
	5 mos.	374	533,501	160,248	739,432	120,744	237,440	13,534	356,014	34,816	762,389	103.06	—22,957	—83,840	—60,699	13,671
Detroit, Toledo & Ironton	May	454	721,562	13,164	744,406	127,791	84,503	6,971	189,236	13,826	422,328	56.73	322,078	311,302	263,293	287,162
	5 mos.	454	2,195,073	72,033	2,319,545	479,557	409,346	35,106	829,230	83,669	1,836,213	79.16	483,333	433,185	306,359	406,648
Detroit & Toledo Shore Line	May	61	204,304	.....	206,589	45,533	32,860	2,619	55,886	5,484	142,382	.....	64,208	50,208	7,974	1,041
	5 mos.	61	933,063	.....	951,080	153,633	181,709	14,179	318,302	31,882	699,704	.....	251,375	189,376	19,458	62,841
Duluth & Iron Range	May	291	470,711	19,301	541,397	141,616	97,353	670	172,535	21,942	434,817	80.31	106,580	67,265	74,471	—631,016
	5 mos.	291	1,134,710	137,734	1,426,728	438,588	611,900	7,471	879,135	108,399	2,048,563	143.58	—621,835	—720,256	—734,332	—838,736
Duluth, Missabe & Northern	May	406	1,447,357	50,051	1,618,783	255,610	165,054	3,390	346,564	24,348	796,865	49.23	821,917	625,218	620,511	—450,573
	5 mos.	406	1,990,438	280,286	2,503,579	995,615	1,015,064	15,858	1,124,978	115,835	3,277,169	130.90	—773,579	—1,030,152	—1,041,814	—1,026,117
Duluth, South Shore & Atlantic	May	591	212,975	91,043	361,602	112,824	84,842	7,150	225,122	13,766	450,123	124.48	—88,521	—115,532	—126,036	—60,222
	5 mos.	591	1,221,629	490,820	1,889,739	283,382	491,168	36,261	1,150,566	66,187	2,065,191	109.28	—175,352	—332,459	—401,083	—101,052
Duluth, Winnipeg & Pacific	May	178	111,888	22,943	140,391	37,419	41,686	6,854	77,035	6,999	169,992	121.09	—29,600	—38,421	—40,005	—40,950
	5 mos.	178	1,063,682	177,391	1,271,413	151,355	269,305	30,092	628,054	56,247	1,135,053	89.28	136,360	70,694	64,037	—7,086
Elgin, Joliet & Eastern	May	836	1,247,621	6	1,366,269	192,558	370,594	12,940	485,318	39,631	1,100,995	80.58	265,274	198,112	91,530	33,537
	5 mos.	836	8,249,357	43	9,103,224	894,075	2,552,100	67,153	3,168,024	208,909	6,889,761	75.69	2,213,462	1,838,951	1,130,933	524,180
El Paso & Southwestern	May	1,027	652,537	184,483	880,257	156,989	165,513	28,278	267,516	45,930	672,953	76.45	207,304	119,571	91,727	—6,156
	5 mos.	1,027	3,654,618	1,067,850	4,977,296	1,086,419	1,129,142	148,424	1,562,821	258,664	4,237,194	85.13	740,102	266,660	178,949	—1,039,860
Erie R. R.	May	1,989	6,670,481	1,237,343	8,471,807	962,287	1,967,201	137,204	3,688,415	309,029	7,107,386	83.82	1,364,421	1,062,535	1,310,532	2,517,961
	5 mos.	1,989	33,017,913	5,757,845	21,484,189	4,303,771	12,663,707	645,710	20,057,909	1,574,184	39,468,680	183.71	2,015,509	566,007	1,954,396	7,449,278
Chicago & Erie	May	269	878,091	70,943	1,011,900	112,556	114,878	20,180	446,502	43,596	738,554	72.99	273,345	229,591	—137,377	—146,721
	5 mos.	269	3,959,030	338,607	4,576,774	535,861	784,008	96,428	2,674,465	213,616	4,305,030	94.06	271,744	52,979	—1,742,576	—413,440
New Jersey & New York	May	47	20,066	108,307	131,984	13,269	18,882	2,345	69,600	2,836	106,929	81.02	25,055	22,033	—7,860	33,331
	5 mos.	47	91,407	488,111	595,967	59,763	100,402	8,774	363,600	13,120	545,653	91.56	50,314	35,617	—100,092	40,263
N. Y., Susquehanna & Western	May	135	222,746	68,238	331,230	39,596	45,629	5,073	214,201	10,333	314,832	95.05	16,398	—9,461	—17,038	—35,703
	5 mos.	135	1,157,752	321,871	1,698,450	227,009	262,894	20,259	1,212,870	50,576	1,773,604	104.43	—75,154	—204,593	—189,804	246,928
Florida East Coast	May	764	756,018	243,721	1,158,340	228,588	255,761	10,083	456,140	34,051	984,734	85.01	173,605	70,763	25,459	—184,958
	5 mos.	764	4,124,739	2,392,231	7,420,791	1,120,902	1,146,104	79,408	2,600,339	153,206	5,188,721	60.92	2,232,071	1,938,556	1,704,941	—123,987
Fort Smith & Western	May	253	112,446	24,491	146,302	28,359	30,165	5,083	56,658	7,517	129,836	88.75	16,465	10,965	4,630	3,556
	5 mos.	253	593,099	130,963	804,446	209,221	200,128	26,586	337,548	40,050	824,974	102.55	—20,528	—48,646	—71,091	—32,058
Georgia	May	329	277,759	103,735	408,548	39,908	110,115	19,274	241,826	22,395	433,533	106.12	—24,984	—30,957	—15,953	—34,291
	5 mos.	329	1,511,570	560,555	2,224,070	249,702	600,378	102,317	1,249,119	105,571	2,307,911	103.77	—83,840	—113,780	—81,571	—191,911
Georgia & Florida	May	405	78,226	14,931	101,439	22,031	22,108	7,471	54,655	8,504	115,989	114.34	—14,551	—22,234	—29,233	—34,301
	5 mos.	405	430,704	87,385	563,465	139,678	100,667	37,430	299,516	42,143	620,654	110.15	—57,189	—96,251	—122,608	263,084
Grand Trunk Western	May	352	1,128,048	119,696	1,285,778	200,488	227,483	29,415	576,741	55,214	1,094,611	85.14	191,167	135,653	—798	379,711
	5 mos.	352	4,412,443	876,994	5,588,437	688,480	1,173,036	178,128	3,002,533	354,257	5,427,105	97.11	161,332	—101,237	—637,949	253,252
Atlanta & St. Lawrence	May	166	162,461	37,875	249,600	80,955	17,176	3,932	102,465	3,213	207,800	83.25	41,800	22,596	—10,923	173,950
	5 mos.	166	1,096,075	210,463	1,418,472	272,502	275,643	16,652	793,600	61,997	1,422,592	100.29	—4,120	—101,266	—450,484	262,882
Chic., Del. & Canada Gr. Tr. Jct.	May	62	123,835	19,749	148,695	18,623	17,226	2,068	67,339	4,037	109,378	73.56	39,317	32,939	11,363	39,027
	5 mos.	62	718,230	75,816	833,720	70,276	89,283	13,394	364,589	26,633	564,744	67.74	268,976	243,787	144,461	174,031

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MAY AND FIVE MONTHS OF CALENDAR YEAR—CONTINUED

Name of road.		Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structure.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operations.	Operating income (or loss).	Net after rentals.	Increase (or decr.) comp. with last year.
Del., Grand Haven & Milwaukee	May	194	222,404	49,220	278,500	67,176	52,388	8,609	196,399	16,527	341,453	122.61	—62,952	—69,197	—130,293	8,053
	5 mos	194	1,101,929	238,206	1,433,702	247,295	261,200	49,180	1,054,938	99,215	1,714,108	119.56	—280,405	—307,126	—562,073	—2,865
Great Northern	May	8,163	5,370,456	1,214,186	7,315,245	1,674,210	1,531,390	135,749	3,173,093	266,572	6,722,486	91.90	592,759	153,497	179,344	—43,001
	5 mos.	8,166	23,434,178	6,485,858	33,455,184	5,840,608	8,142,780	694,130	16,668,502	1,277,925	32,653,806	97.60	801,379	—2,932,732	—2,799,145	—3,089,195
Green Bay & Western	May	252	81,324	14,688	101,684	19,811	23,523	1,443	41,692	2,888	89,356	87.88	12,328	4,828	4,883	15,850
	5 mos.	252	447,906	96,471	583,382	80,431	135,649	9,128	231,838	17,125	474,163	81.28	109,219	73,691	64,645	48,283
Gulf & Ship Island	May	307	175,805	46,572	235,711	41,142	43,644	6,202	88,650	13,910	193,828	82.23	41,884	22,003	17,955	844
	5 mos.	307	865,134	222,042	1,166,211	223,209	233,766	36,176	462,549	70,227	1,027,700	88.12	138,511	40,650	53,888	73,953
Gulf Coast Lines	May	920	576,268	181,167	803,745	155,026	134,900	25,969	287,688	37,383	640,087	79.63	163,658	127,373	90,254	17,938
	5 mos.	920	3,608,016	1,057,492	4,920,461	941,432	875,909	142,498	1,668,950	217,241	3,832,524	77.89	1,087,937	909,021	681,978	261,387
Gulf, Mobile & Northern	May	463	271,892	39,020	328,828	52,875	75,956	13,641	169,382	15,349	327,202	99.51	1,625	—21,061	—31,608	31,475
	5 mos.	463	1,444,483	220,659	1,743,309	318,114	375,064	62,305	833,621	81,471	1,670,574	95.83	72,734	—8,693	—38,727	222,369
Hocking Valley	May	350	1,110,781	103,002	1,302,739	155,333	504,945	10,204	441,954	35,235	1,147,667	88.10	155,072	69,961	17,215	—109,418
	5 mos.	350	4,060,382	535,615	4,860,010	702,382	2,337,643	55,853	1,943,015	181,609	5,219,508	107.40	—359,498	—786,737	—618,010	—1,376,771
Illinois Central	May	4,799	8,386,688	1,963,102	11,018,807	1,831,978	2,626,219	150,914	4,602,022	309,677	9,558,165	86.74	1,460,642	875,003	964,069	1,203,309
	5 mos.	4,799	43,367,079	10,377,559	57,472,152	7,934,275	12,368,785	775,082	24,081,670	1,571,522	47,050,711	81.87	10,421,441	7,087,605	7,730,964	3,103,171
Yazoo & Mississippi	May	1,381	1,120,735	319,302	1,501,315	326,261	343,677	25,412	721,177	49,425	1,463,839	97.50	37,476	—68,067	—73,693	33,727
	5 mos.	1,381	6,265,887	1,763,625	8,481,474	1,632,459	1,687,813	130,713	3,947,154	282,314	7,688,990	90.66	792,484	265,263	238,534	—18,851
International & Great Northern	May	1,159	1,428,413	265,996	1,784,091	241,185	286,802	26,297	839,777	58,460	1,458,428	81.75	325,664	283,067	138,665	515,778
	5 mos.	1,159	6,103,620	1,296,296	8,012,701	1,155,265	1,561,204	128,620	4,391,669	277,738	7,556,732	94.31	455,969	285,687	—370,165	1,029,253
Kansas City, Mexico & Orient	May	272	149,470	12,227	167,551	32,959	48,425	5,452	92,057	15,313	194,206	115.91	—26,655	—34,695	—36,334	26,268
	5 mos.	272	615,511	60,704	717,274	160,167	246,190	28,192	397,866	67,363	879,778	123.71	—182,505	—222,737	—200,058	91,291
Kan. City, Mex. & Orient of Tex.	May	465	173,019	14,902	201,303	39,292	57,728	5,211	116,920	7,075	226,226	112.38	—24,923	—31,073	—54,122	45,161
	5 mos.	465	756,875	85,499	881,882	233,657	280,250	28,747	571,314	34,388	1,148,355	130.22	—266,473	—297,248	—375,218	13,267
Kansas Southern	May	779	1,381,774	185,525	1,663,916	227,240	296,590	42,437	606,641	82,207	1,241,827	75.24	412,089	335,130	326,527	123,922
	5 mos.	779	6,879,716	957,135	8,365,129	1,010,275	1,436,130	201,080	3,157,171	375,178	6,170,642	73.77	2,194,487	1,808,560	1,751,109	992,296
Texarkana & Ft. Smith	May	93	134,869	17,152	170,233	14,576	24,055	5,642	54,018	9,073	107,244	63.00	62,989	55,636	39,669	896
	5 mos.	93	767,783	91,346	940,599	85,350	105,973	25,139	348,279	41,132	604,769	64.30	335,829	299,012	152,719	—74,024
Kansas City Terminal	May	27	.....	.....	103,805	17,831	18,498	.....	50,620	4,406	93,720	90.29	10,085	—16,425	187,239	22,996
	5 mos.	27	.....	.....	638,512	70,294	104,649	.....	281,955	18,627	488,873	76.56	149,639	16,880	1,085,599	233,652
Kansas, Oklahoma & Gulf	May	314	134,583	13,152	154,700	46,414	27,007	3,654	80,769	9,822	167,836	108.49	—13,136	—21,644	—24,391	—16,067
	5 mos.	321	861,022	90,767	1,004,952	258,183	206,158	29,996	465,901	55,293	1,007,533	100.26	—2,581	—45,135	—98,896	107,237
Lake Superior & Ishpeming	May	33	16,246	170	19,528	18,470	14,391	219	9,782	2,973	45,835	234.71	—26,307	—31,665	—30,278	—172,616
	5 mos.	33	38,540	1,391	47,828	92,989	100,694	1,370	51,913	18,202	265,168	554.42	—217,340	—244,395	—241,066	—183,355
Lake Terminal	May	13	.....	.....	100,967	12,943	11,750	.....	59,226	101	84,019	83.31	16,948	11,048	9,898	32,045
	5 mos.	13	.....	.....	603,616	91,655	124,279	.....	361,284	753	577,972	95.75	25,644	—4,509	—5,073	116,048
Lehigh & Hudson River	May	96	242,386	3,745	261,280	25,868	31,771	1,752	115,759	7,007	182,157	69.72	79,123	66,971	45,402	—10,885
	5 mos.	96	1,253,465	20,357	1,325,467	133,193	232,467	10,410	602,420	39,018	1,017,507	76.77	307,960	247,201	137,286	253,469
Lehigh & New England	May	237	378,007	2,026	395,443	80,757	105,409	9,593	126,189	15,784	337,731	85.41	57,712	42,259	49,219	—108,487
	5 mos.	237	1,706,719	10,803	1,779,553	231,237	430,083	28,595	676,148	85,579	1,451,468	81.56	328,086	250,821	334,643	23,898
Lehigh Valley	May	1,448	5,347,230	654,783	6,349,402	654,028	2,445,460	125,461	2,694,367	171,576	6,113,490	96.28	235,912	85,899	49,586	1,684,397
	5 mos.	1,448	25,171,659	3,028,763	30,262,306	2,997,458	12,334,856	541,419	14,121,069	757,361	30,865,951	101.99	—603,644	—1,576,403	—1,490,483	3,622,229
Los Angeles & Salt Lake	May	1,168	1,053,416	372,453	1,563,705	367,082	296,178	50,710	580,095	34,243	1,370,541	87.65	193,165	101,396	61,373	—366,737
	5 mos.	1,168	5,229,757	2,311,458	8,205,637	1,764,688	1,670,130	264,602	2,995,791	188,528	7,106,323	86.60	1,099,314	629,942	427,175	—1,014,556
Louisiana & Arkansas	May	302	251,512	33,621	289,945	50,604	53,417	5,683	96,605	8,738	215,014	74.16	74,931	58,679	48,514	4,255
	5 mos.	302	1,203,658	173,735	1,419,240	282,635	313,587	29,779	534,490	46,504	1,205,220	84.92	214,020	130,565	90,596	—331,172
Louisiana Ry. & Nav. Co.	May	343	253,444	34,420	300,120	56,186	35,263	10,373	112,121	12,162	225,921	75.28	74,199	57,940	40,146	77,269
	5 mos.	343	1,296,022	169,779	1,571,985	374,376	228,135	50,641	686,348	64,556	1,402,966	89.25	169,019	88,473	—1,653	22,006
Louisville & Nashville	May	5,043	7,481,484	1,838,451	9,893,633	1,613,005	2,937,895	202,998	4,457,616	258,545	9,487,031	95.89	406,608	101,913	111,332	—336,537
	5 mos.	5,043	35,162,591	9,779,115	47,774,594	7,255,446	15,001,144	1,082,239	23,026,192	1,342,478	47,820,989	100.10	—46,396	—1,570,723	—2,114,444	—6,206,713
Louisville, Henderson & St. Louis	May	199	150,112	67,699	232,160	45,333	58,593	6,963	93,124	8,478	212,490	91.53	19,671	12,277	—987	—17,610
	5 mos.	199	771,359	308,500	1,188,582	232,738	212,070	34,380	472,993	46,979	999,161	84.06	189,421	152,491	80,773	—52,162
Maine Central	May	1,215	1,089,325	365,011	1,553,955	382,936	438,529	12,300	803,287	46,546	1,683,960	108.37	—130,005	—235,616	—241,621	—176,096
	5 mos.	1,215	6,440,985	1,893,274	8,880,930	1,779,932	2,786,427	67,033	4,888,893	261,683	9,788,039	110.21	—907,109	—1,435,239	—1,610,698	—278,056
Midland Valley	May	388	263,578	76,180	354,453	79,673	60,777	4,544	129,100	16,733	290,620	81.99	63,834	55,661	48,599	—52,514
	5 mos.	388	1,430,501	417,654	1,930,485	467,779	349,541	26,091	689,758	112,084	1,643,015	85.11	287,469	246,593	220,375	6,822
Minneapolis & St. Louis	May	1,650	1,014,145	168,095	1,234,432	228,913	306,475	24,139	802,937	43,061	1,405,429	113.85	—170,997	—260,711	—286,180	—77,565
	5 mos.	1,650	5,162,891	987,854	6,438,645	900,014	1,747,261	123,890	3,625,283	225,443	6,622,113	102.85	—183,468	—566,711	—659,898	—451,346
Minneapolis, St. P. & S. S. Marie	May	4,242	2,248,794	582,332	3,084,886	714,570	638,512	51,484	1,557,141	104,524	3,081,137	99.87	3,748	—257,068	—327,222	—509,184
	5 mos.	4,242	11,723,708	3,155,263	16,097,584	2,859,975	4,592,152	261,511	8,651,615	582,586	17,044,893	105.88	—947,310	—2,115,083	—2,707,668	—2,616,882
Mississippi Central	May	....	59,934	17,957	80,809	16,620	33,384	2,880	32,587	7,296	92,768	114.80	—11,959	—20,945	—22,665	—23,930
	5 mos.	....	308,364	91,293	416,216	74,934	153,386	13,580	163,032	35,897	440,830	105.91	—24,613	—58,057	—54,687	131,262
Missouri & North Kansas	May	365	64,324	26,257	96,503	39,568	43,378	3,688	70,533	5,986	163,153	169.07	—66,650	—71,015	—84,267	—38,423
	5 mos.	364	305,288	132,705	473,458	179,932	198,362	18,949	311,415	33,104	741,749	156.67	—268,291	—291,241	—339,176	—140,914
Missouri, Kansas & Texas	May	1,715	1,884,013	550,781	2,616,072	338,172	789,395	46,298	974,381	90,105	2,239,240	85.60	376,832	217,626	309,834	61,271
	5 mos.	1,715	9,362,363	3,004,390	13,334,026	1,723,610	4,032,07.	244,253	4,995,994	514,513	11,504,099	86.28	1,830,018	1,208,312	1,738,004	—180,059
Mo., Kans. & Tex. of Texas	May	1,739	1,362,749	519,735	2,037,179	289,425	421,402	42,083	847,670	98,558	1,714,337	84.15	322,841	274,433	80,179	893,627
	5 mos.	1,739	7,545,426	2,806,258	11,182,314	1,612,745	2,058,428	216,871	4,860,310	502,048	9,319,183	83.34	1,863,132	1,621,719	342,731	3,920,492
Wichita Falls & Northwestern	May	328	135,824	26,421	173,279	38,066	39,528	838	69,931	6,335	154,683	89.27	18,596	7,671	—20,304	43,016
	5 mos.	328	776,071	146,364	972,410	156,215	169,708	4,878	383,051	37,898	751,513	77.28	220,887	166,323	71,724	436,199

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MAY AND FIVE MONTHS OF CALENDAR YEAR—CONTINUED

Name of road.		Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operations.	Operating income (or loss).	Net after rentals	Increase (or decr.) comp. with last year.
			Freight.	Passenger.	Total (inc. misc.)	Maintenance of Way and structure.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.					
Missouri Pacific	May	7,300	6,478,013	1,518,735	8,651,373	1,598,602	1,693,797	165,062	3,569,398	289,218	7,338,315	84.82	1,313,058	969,116	711,945	925,178
	5 mos.	7,300	32,169,310	8,133,649	43,816,572	7,584,946	9,779,801	862,584	19,862,593	1,490,340	39,715,638	90.64	4,100,934	2,634,226	1,812,890	991,475
Mobile & Ohio	May	1,165	1,347,937	150,777	1,577,382	201,935	371,865	48,135	634,710	50,477	1,308,266	82.94	269,116	207,513	201,805	238,805
	5 mos.	1,165	6,759,658	794,420	7,938,277	1,097,624	2,196,427	249,414	3,397,641	268,166	7,215,876	90.90	722,401	415,468	397,221	319,527
Columbus & Greenville	May	278	80,998	25,373	112,718	31,094	11,386	3,258	69,078	5,637	120,453	106.86	—7,735	—23,330	—42,378	29,800
	5 mos.	278	484,889	148,175	673,555	200,797	104,154	17,879	401,818	31,979	756,626	112.33	—83,072	—151,830	—269,186	—70,242
Monongahela	May	106	249,946	37,751	292,219	85,517	82,275	1,612	98,879	10,545	278,829	95.42	13,390	6,890	—48,594	8,756
	5 mos.	106	1,366,419	187,958	1,577,634	399,362	355,627	10,122	535,642	43,191	1,346,944	85.38	230,690	198,190	—91,683	280,439
Monongahela Connecting	May	7	.....	.....	61,690	6,384	10,448	506	30,385	5,668	53,390	86.55	8,300	6,712	3,914	—42,699
	5 mos.	7	.....	.....	318,296	47,325	76,455	2,798	184,843	32,441	343,863	108.03	—25,567	—34,751	—56,660	—364,361
Montour	May	56	213,044	911	215,924	33,720	72,792	1,062	42,327	7,124	157,029	72.72	58,895	51,370	65,628	53,676
	5 mos.	56	644,070	5,706	659,423	118,957	330,847	5,783	191,050	36,673	683,364	103.63	—23,942	—41,806	85,452	77,812
Nashville, Chattanooga & St. Louis	May	1,258	1,155,866	399,560	1,649,928	293,757	421,801	63,747	798,133	61,513	1,641,916	99.51	8,012	—45,222	—32,197	—325,768
	5 mos.	1,258	5,717,041	2,128,377	8,483,501	1,547,216	2,432,137	361,467	4,309,947	292,335	8,972,248	105.76	—488,747	—742,805	—477,759	—1,434,305
Nevada Northern	May	164	8,229	4,704	16,580	11,723	4,174	452	7,087	3,149	26,585	160.34	—10,006	—19,779	—19,420	—74,799
	5 mos.	164	137,588	32,525	193,297	59,506	38,809	3,168	65,864	18,207	205,798	106.47	—12,501	—61,620	—47,750	—249,467
Newburgh & South Shore	May	7	.....	.....	82,841	14,677	21,622	.....	46,914	4,436	87,649	105.80	—4,808	—14,678	—9,964	16,695
	5 mos.	7	.....	.....	549,167	57,859	135,787	.....	296,127	23,418	513,191	93.45	35,976	—11,829	5,497	182,314
New Orleans Great Northern	May	274	145,614	42,291	195,393	35,657	38,005	7,638	86,770	10,584	179,020	91.62	16,372	251	—4,938	—26,458
	5 mos.	274	788,212	217,934	1,043,243	171,130	175,732	28,721	456,747	49,604	884,145	84.75	159,098	81,381	84,748	—13,354
New York Central	May	6,078	15,817,757	7,799,184	26,566,190	2,784,602	5,800,454	323,526	10,519,884	747,862	20,520,020	77.24	6,046,070	4,344,560	4,442,457	7,374,670
	5 mos.	6,076	79,139,222	36,614,490	129,660,157	14,444,962	30,996,810	1,649,637	57,233,485	4,199,761	110,269,675	85.05	19,390,482	11,205,878	11,529,521	8,532,900
Cincinnati Northern	May	342	216,191	43,618	271,939	52,454	67,518	7,134	144,175	8,067	279,348	102.72	—7,409	—19,714	—37,448	6,402
	5 mos.	342	1,158,652	215,774	1,450,410	311,088	370,036	34,450	772,273	36,275	1,524,122	105.08	—73,712	—126,214	—169,516	—15,692
Cleve., Cin., Chic. & St. Louis	May	2,410	4,685,324	1,434,678	6,647,935	1,031,850	1,580,945	101,957	2,704,195	160,481	5,633,139	84.74	1,014,795	699,177	653,989	—1,204,524
	5 mos.	2,418	23,117,008	7,015,288	32,650,879	4,335,844	6,863,668	586,205	15,223,389	852,222	28,121,874	86.13	4,529,005	2,948,844	1,944,204	—2,676,305
Indiana Harbor Belt	May	120	.....	.....	712,299	77,864	151,447	3,404	281,904	27,210	541,828	76.07	179,471	151,073	65,817	413,702
	5 mos.	120	.....	.....	3,680,431	550,494	720,438	19,929	1,855,019	133,325	3,279,345	89.10	401,086	316,468	—164,793	1,019,750
Kanawha & Michigan	May	176	382,623	59,572	456,079	70,861	109,291	3,328	147,447	11,103	342,030	74.99	114,050	78,394	87,171	—10,600
	5 mos.	176	1,453,186	301,475	1,822,621	338,795	792,743	20,541	715,504	54,171	1,921,750	105.44	—99,129	—277,409	—3,677	—156,910
Lake Erie & Western	May	738	684,513	58,633	780,577	109,818	141,559	19,041	316,611	25,761	612,495	78.47	168,082	92,991	79,311	22,555
	5 mos.	738	3,194,109	312,566	3,679,842	605,477	1,036,928	96,111	1,715,734	141,701	3,595,133	97.70	84,709	—169,599	—177,484	—293,078
Michigan Central	May	1,865	3,718,995	1,617,310	5,885,226	775,475	1,118,330	101,250	2,454,770	149,120	4,664,041	79.25	1,221,185	995,814	1,031,554	1,272,742
	5 mos.	1,865	17,474,529	8,029,324	28,152,700	3,528,559	5,617,849	496,259	12,886,307	782,806	23,664,580	84.06	4,488,121	3,358,639	3,349,765	1,556,518
Pittsburgh & Lake Erie	May	324	1,641,278	251,393	2,023,435	303,271	551,986	16,783	658,352	66,694	1,598,151	78.98	425,284	234,062	454,908	1,529,744
	5 mos.	324	8,533,636	1,334,098	10,720,434	1,733,808	3,078,015	106,845	4,463,880	386,091	9,775,557	91.19	944,877	—140,673	1,035,725	1,440,054
Toledo & Ohio Central	May	503	792,529	74,637	907,086	153,835	185,922	9,675	367,500	26,785	745,926	82.23	161,160	106,861	117,149	145,585
	5 mos.	503	3,536,111	382,162	4,071,579	654,825	979,944	56,052	1,827,402	149,312	3,680,395	90.39	391,184	113,429	294,033	160,658
New York, Chicago & St. Louis	May	574	2,017,911	130,870	2,192,423	264,888	492,634	57,789	889,583	71,365	1,781,003	81.23	411,421	315,373	253,628	—118,607
	5 mos.	574	10,172,234	537,293	10,911,061	1,027,496	2,249,425	277,771	4,772,623	369,016	8,717,795	79.90	2,193,267	1,697,186	1,673,443	—129,886
N. Y., New Haven & Hartford	May	1,986	4,271,242	4,253,452	9,423,486	1,415,811	2,362,033	64,408	4,531,157	370,352	8,915,419	94.61	508,067	111,035	—333,772	222,471
	5 mos.	1,986	20,266,108	20,347,627	45,282,315	6,521,818	11,781,324	308,750	24,859,510	1,816,748	46,214,061	102.06	—931,746	—2,923,352	—4,653,347	296,383
Central New England	May	301	571,133	21,725	621,086	89,335	104,384	3,845	233,849	16,161	447,571	72.06	173,515	145,242	164,965	363,578
	5 mos.	301	3,153,481	130,991	3,425,293	474,329	511,886	20,026	1,427,449	76,817	2,510,912	73.31	914,381	800,086	407,565	1,913,975
New York, Ontario & Western	May	569	788,142	255,040	1,205,911	162,789	296,122	16,595	519,235	28,186	1,022,926	84.83	182,985	147,233	116,715	98,049
	5 mos.	569	3,611,073	799,385	5,156,229	645,745	1,423,840	72,452	2,570,063	170,952	4,883,052	94.70	273,177	85,398	33,528	594,416
Norfolk & Western	May	2,220	5,512,033	793,311	6,613,063	957,840	1,627,919	67,458	2,725,309	148,683	5,542,829	83.82	1,070,234	680,149	871,397	210,034
	5 mos.	2,220	26,738,046	4,092,621	32,141,053	4,676,794	8,202,972	362,332	13,967,477	798,228	28,093,590	87.41	4,047,462	2,094,394	3,119,680	643,899
Norfolk Southern	May	942	436,520	127,831	606,554	108,837	126,359	22,061	299,629	34,384	591,707	97.55	14,847	—17,828	—18,617	64,271
	5 mos.	943	2,400,238	629,191	3,227,244	516,878	496,962	112,965	1,620,655	167,368	2,916,368	90.37	310,876	149,412	89,247	194,337
Northern Pacific	May	6,655	5,085,332	1,316,122	7,037,078	1,826,856	1,647,401	126,768	3,038,253	249,227	7,005,158	99.55	31,920	—634,676	—393,021	—459,698
	5 mos.	6,655	22,952,976	6,705,542	33,018,536	5,782,578	8,306,572	598,076	15,362,830	1,294,340	31,765,287	96.20	1,253,249	—2,418,984	—1,211,337	—6,437,340
Northwestern Pacific	May	534	372,911	263,641	730,617	121,677	84,675	7,047	288,199	17,143	520,840	71.29	209,776	179,245	174,443	5,684
	5 mos.	534	1,455,843	1,037,441	2,856,220	613,672	418,823	32,254	1,328,361	87,592	2,492,448	86.99	363,772	210,989	198,541	—40,717
Pennsylvania R.R.	May	7,323	26,247,127	11,216,654	40,773,400	5,289,152	9,611,916	484,903	17,376,398	1,190,328	34,607,839	84.96	6,165,562	4,417,171	3,848,609	9,[illegible]5,933
	5 mos.	7,323	133,303,505	54,403,648	205,316,708	23,718,584	57,316,744	2,347,109	94,084,582	5,788,394	186,831,111	91.00	18,485,597	9,789,950	6,370,847	37,314,949
Balt., Chesapeake & Atlantic	May	87	94,550	29,556	127,075	17,190	33,748	1,620	82,846	3,570	138,975	109.37	—11,899	—15,699	—16,416	—38,312
	5 mos.	87	407,635	141,488	562,323	72,157	180,366	7,805	369,259	19,386	648,974	115.41	—86,650	—105,659	—110,286	—56,123
Cincinnati, Lebanon & Northern	May	76	81,000	7,651	91,191	16,657	36,388	1,875	64,865	2,629	122,414	134.24	—31,223	—39,886	—40,317	42,721
	5 mos.	76	376,300	41,772	436,362	81,561	131,524	8,549	360,354	15,583	537,544	123.19	—101,182	—144,491	—151,211	17,665
Grand Rapids & Indiana	May	575	488,300	148,424	682,222	89,319	160,735	13,915	377,292	15,299	656,881	96.29	25,341	—10,462	—40,516	—225,943
	5 mos.	575	2,358,190	843,901	3,468,370	343,954	859,339	70,484	1,961,280	125,190	3,363,178	96.97	105,192	—73,831	—184,513	—149,340
Long Island	May	398	625,517	1,604,278	2,472,347	382,557	475,502	18,053	1,166,350	65,933	2,128,100	86.08	344,248	221,549	198,302	—157,414
	5 mos.	398	2,986,530	6,046,086	9,974,357	1,401,855	2,239,486	85,553	5,833,250	329,453	9,985,512	100.11	—11,154	—627,970	—771,048	989,371
Maryland, Delaware & Virginia	May	82	76,592	21,705	103,031	14,525	23,768	1,454	63,080	2,729	105,555	102.45	—2,524	—4,624	—5,978	—26,976
	5 mos.	82	309,276	100,854	426,633	59,486	83,914	5,322	307,938	13,065	469,726	110.10	—43,093	—53,596	—56,345	—129,160
N. Y., Philadelphia & Norfolk	May	122	290,000	103,256	461,052	47,359	162,244	9,194	333,133	14,764	579,834	125.76	—118,782	—142,648	—159,783	—10,861
	5 mos.	122	1,759,000	492,684	2,451,257	256,332	711,702	44,155	1,626,912	71,514	2,774,005	113.17	—322,748	—441,960	—506,606	46,696
Pittsburgh, Cin., Chic. & St. L.	**May**	**2,383**	**5,050,800**	**1,824,757**	**7,598,923**	**1,312,462**	**2,049,858**	**119,978**	**3,590,567**	**221,096**	**7,368,493**	**96.97**	**230,430**	**—178,754**	**—552,868**	**1,090,287**
	5 mos.	**2,383**	**26,543,100**	**9,564,906**	**40,235,127**	**5,110,450**	**12,486,002**	**609,650**	**19,552,310**	**1,221,687**	**39,321,553**	**97.73**	**913,574**	**—1,130,494**	**—2,853,223**	**1,167,151**

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MAY AND FIVE MONTHS OF CALENDAR YEAR 1921—CONTINUED

Name of road.		Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structure.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operations.	Operating income (or loss).	Net after rentals.	Increase (or decr.) comp. with last year.
West Jersey & Seashore	May	359	296,273	691,196	1,071,097	163,616	214,867	14,432	526,375	27,839	956,063	89.26	115,034	56,761	41,823	90,855
	5 mos.	359	1,323,811	2,768,656	4,438,046	835,842	984,697	64,977	2,710,345	126,243	4,767,147	107.42	—329,101	—611,204	—683,322	—544,302
Peoria & Pekin Union	May	19	11,901	2,485	121,479	15,629	25,662	467	63,873	6,211	111,842	92.07	9,638	—1,235	21,337	32,312
	5 mos.	19	69,967	13,143	705,491	99,846	161,453	742	436,874	30,068	728,984	103.33	—23,493	—88,641	13,747	35,829
Pere Marquette	May	2,238	2,387,002	448,535	3,088,511	522,228	740,580	47,222	1,317,977	113,696	2,753,441	89.15	335,070	241,259	137,074	54,770
	5 mos.	2,238	10,495,828	2,252,676	13,812,562	1,743,537	2,987,116	246,937	6,704,584	559,434	12,284,597	88.94	1,527,965	938,048	704,616	1,916,894
Philadelphia & Reading	May	1,126	5,816,582	962,318	7,009,505	815,444	1,874,977	69,544	2,849,352	161,402	5,795,431	82.68	1,214,074	970,897	786,274	269,222
	5 mos.	1,126	29,032,929	4,655,553	35,116,724	3,810,629	10,230,708	291,751	15,642,482	871,780	30,970,200	88.19	4,136,524	2,927,509	1,869,043	1,995,266
Atlantic City	May	177	150,110	263,383	414,921	52,877	57,014	3,286	201,444	1,347	316,067	76.18	98,854	75,299	49,888	41,429
	5 mos.	177	523,958	861,771	1,416,445	305,050	250,308	14,116	988,901	7,377	1,566,265	110.58	—149,820	—245,009	—365,815	—204,252
Perkiomen	May	41	80,958	11,518	96,261	14,607	4,187	13	40,157	402	59,389	61.70	36,872	33,728	27,956	2,573
	5 mos.	41	414,183	45,412	541,102	39,513	20,115	71	191,152	2,331	253,274	46.81	287,829	272,109	246,692	81,404
Port Reading	May	21	146,329	.....	200,375	21,053	6,692	18	66,843	270	94,875	47.35	105,500	91,095	24,132	121,957
	5 mos.	21	765,040	.....	1,048,969	86,072	36,449	90	395,820	5,006	523,435	49.90	525,533	458,476	136,689	410,601
Pittsburgh & Shawmut	May	102	75,387	5,083	81,553	26,117	37,588	1,331	31,758	7,248	104,043	.....	—22,490	—22,612	—5,470	—73,857
	5 mos.	102	493,024	34,722	535,359	124,120	223,992	11,237	212,169	37,023	608,541	.....	—73,182	—73,967	80,267	—179,000
Pittsburgh & West Virginia	May	63	134,861	13,135	182,138	36,191	50,145	1,450	59,195	9,759	167,182	91.79	14,956	—4,545	—1,336	20,099
	5 mos.	63	552,695	62,125	775,872	170,309	263,048	9,656	324,403	48,027	873,618	112.60	—97,746	—195,989	—171,003	40,132
Pittsburgh, Shawmut & Northern	May	210	91,358	6,230	100,064	32,461	49,239	1,365	44,364	9,829	137,261	137.17	—37,197	—39,436	—32,993	—16,612
	5 mos.	210	451,125	39,808	499,528	136,690	270,560	7,568	251,059	34,002	699,902	140.11	—200,373	—211,573	—97,110	—72,385
Quincy, Omaha & Kansas City	May	252	68,709	25,370	103,895	43,494	16,362	606	54,262	2,194	116,704	112.33	—12,809	—17,065	—20,020	42,037
	5 mos.	253	348,101	133,945	519,119	143,596	83,848	4,438	320,855	12,002	563,225	108.50	—44,107	—64,989	—83,140	64,627
Richmond, Fredericksburg & Potomac	May	117	494,882	266,952	859,994	114,843	140,316	10,708	375,034	27,505	681,515	79.25	178,478	143,270	95,621	—80,965
	5 mos.	117	2,377,131	1,738,142	4,605,131	751,555	759,799	42,805	1,960,322	147,399	3,753,218	81.50	851,913	682,924	444,487	—690,654
Rutland	May	415	281,356	111,067	481,389	96,474	94,223	8,953	208,440	14,185	424,625	88.21	56,763	32,947	57,739	226,472
	5 mos.	415	1,365,701	590,590	2,329,891	469,983	561,538	42,691	1,165,808	74,405	2,323,925	99.74	5,967	—113,166	—23,219	170,206
St. Louis-San Francisco	May	4,760	4,292,844	1,705,446	6,343,077	647,485	1,236,814	75,211	2,632,665	197,769	4,725,223	74.49	1,617,854	1,322,133	1,259,173	432,666
	5 mos.	4,760	22,868,796	8,577,072	33,544,308	3,680,454	6,601,074	428,836	14,025,123	1,109,825	25,620,166	76.38	7,924,143	6,560,476	6,514,798	2,164,245
Ft. Worth & Rio Grande	May	235	89,465	41,174	145,782	36,192	26,596	3,183	68,856	6,717	141,282	96.91	4,501	823	—5,669	45,190
	5 mos.	235	412,072	216,462	687,322	192,680	131,819	17,275	402,976	36,528	780,014	113.49	—92,692	—111,181	—173,676	—9,694
St. Louis, San Francisco & Tex.	May	134	120,270	16,586	131,122	24,005	26,690	2,722	73,827	7,002	134,235	102.37	—3,113	—5,126	—37,647	—3,753
	5 mos.	134	581,328	95,945	701,646	199,902	169,042	16,708	446,139	33,990	865,580	123.36	—163,934	—174,378	—351,471	—123,729
St. Louis Southwestern	May	968	1,214,886	142,715	1,406,062	160,940	219,772	47,400	400,349	58,861	894,027	63.58	512,034	451,252	408,090	—173,838
	5 mos.	968	5,889,652	775,062	6,943,902	816,416	1,234,303	242,687	2,111,322	285,774	4,726,077	68.06	2,217,825	1,962,894	1,806,052	923,931
St. Louis Southwestern of Tex.	May	807	433,622	92,772	569,532	159,410	145,883	19,567	315,927	42,319	682,500	119.84	—112,968	—137,062	—121,155	94,610
	5 mos.	807	2,290,130	494,101	3,019,126	742,726	903,393	106,385	1,689,583	188,325	3,633,944	120.36	—614,818	—735,294	—655,252	344,366
San Antonio & Aransas Pass	May	738	384,803	79,792	490,636	102,845	112,586	9,334	274,264	25,663	524,567	106.92	—33,932	—48,665	—58,202	48,426
	5 mos.	738	1,742,884	404,240	2,288,935	370,245	534,693	51,891	1,352,835	127,068	2,634,762	115.11	—345,827	—413,648	—398,044	13,170
San Antonio, Uvalde & Gulf	May	317	99,666	22,709	131,456	17,060	24,785	4,592	46,656	6,898	99,992	76.07	31,464	28,676	18,562	35,500
	5 mos.	317	340,232	125,746	522,541	73,573	84,589	15,463	220,337	33,725	427,687	81.85	94,854	80,547	26,513	233,102
Seaboard	May	3,563	2,351,166	680,673	3,369,367	414,665	636,188	133,817	1,763,486	151,911	3,130,453	.....	238,914	86,508	—67,057	570,126
	5 mos.	3,563	13,099,819	4,414,434	19,121,500	2,210,643	3,232,947	643,745	214,788	765,419	16,675,049	.....	2,446,452	1,687,883	852,326	1,684,884
Southern Ry.	May	6,971	6,610,228	2,585,501	10,112,276	1,508,101	1,606,545	200,121	4,626,385	345,705	8,374,487	82.82	1,737,789	1,342,098	1,013,163	—1,078,151
	5 mos.	6,971	34,383,923	13,000,734	52,198,199	8,831,269	10,368,962	1,061,583	24,852,167	1,742,477	47,321,336	90.66	4,876,963	3,144,320	1,044,989	—7,248,048
Alabama Great Southern	May	313	483,530	171,592	705,161	111,629	144,570	20,504	339,670	25,005	649,069	92.05	56,092	27,929	17,989	—279,528
	5 mos.	313	2,863,325	833,970	3,951,317	616,037	875,816	111,498	1,934,127	119,182	3,691,153	93.42	260,164	132,195	130,312	—754,755
Cin., New Orleans & Tex. Pac.	May	338	1,150,366	273,488	1,506,503	186,439	299,353	27,217	617,080	40,982	1,181,317	78.41	325,186	273,265	277,504	—237,219
	5 mos.	338	5,440,868	1,524,726	7,426,930	1,027,363	1,916,264	148,606	3,304,864	209,327	6,669,450	89.80	757,478	512,268	510,257	—1,180,090
Georgia Southern & Florida	May	402	242,530	69,892	343,811	75,289	64,969	8,074	194,866	12,305	357,242	103.91	—13,431	—30,620	—65,513	—167,919
	5 mos.	402	1,265,048	456,414	1,889,395	432,982	434,801	43,772	1,102,682	64,549	2,095,089	110.89	—205,694	—291,652	—415,827	—714,206
New Orleans & Northeastern	May	207	376,164	90,233	505,951	70,196	110,080	11,508	263,081	17,539	476,704	94.22	29,247	—19,319	—6,957	—120,871
	5 mos.	207	2,100,517	459,276	2,786,577	467,100	552,046	62,982	1,399,997	83,558	2,589,182	92.92	197,395	—8,388	—138,115	—514,588
Northern Alabama	May	110	49,198	12,145	64,535	17,859	4,093	1,823	32,895	3,217	59,888	92.80	4,647	823	—13,284	6,051
	5 mos.	110	296,725	69,772	381,130	83,052	26,189	9,588	207,775	17,086	343,689	90.18	37,440	16,925	—53,311	—62,861
Southern Pacific	May	7,110	9,824,074	3,930,251	15,593,884	2,312,121	2,977,735	223,713	6,126,255	445,004	12,365,301	72.30	3,228,582	2,315,559	2,073,733	—460,003
	5 mos.	7,110	45,653,354	21,068,836	74,835,559	10,584,079	13,344,271	1,092,355	30,341,938	2,305,465	59,327,820	79.28	15,507,740	10,933,033	10,219,494	1,852,405
Arizona Eastern	May	382	143,807	34,699	196,990	36,415	44,036	4,600	83,842	22,109	192,348	97.64	4,641	—22,795	—34,909	—94,884
	5 mos.	382	1,077,424	224,117	1,406,269	244,134	234,097	19,321	524,072	112,689	1,157,002	82.28	249,267	114,773	54,885	—167,157
Atlantic S. S. Lines	May	...	633,278	38,948	707,526	11,577	178,729	18,488	488,074	27,981	724,848	102.45	—17,322	—28,873	—28,593	294,987
	5 mos.	...	3,838,408	314,742	4,387,840	70,857	917,749	88,232	2,929,695	141,269	4,147,802	94.53	240,038	182,391	187,870	2,382,978
Galveston, Harrisburg & S. Cont.	May	1,380	1,308,407	428,129	1,862,578	428,044	415,616	49,124	783,669	87,083	1,778,266	95.47	84,312	41,041	—15,649	319,489
	5 mos.	1,380	7,833,094	2,295,521	10,898,945	1,891,452	2,365,837	252,650	4,430,607	416,421	9,434,497	85.56	1,464,448	1,347,653	652,471	1,463,296

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MAY AND FIVE MONTHS OF CALENDAR YEAR—CONTINUED

Name of road.		Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structure.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operations.	Operating income (or loss).	Net after rentals.	Increase (or decr.) comp. with last year.
Houston & Texas Central	May	932	689,774	235,982	955,846	299,596	158,943	20,808	412,931	36,971	927,809	97.07	28,037	—16,483	—51,310	56,413
	5 mos.	932	3,647,137	1,099,430	4,997,036	1,358,982	892,095	103,486	2,144,839	169,267	4,665,103	93.36	331,933	111,323	—105,863	38,108
Houston, East & West Tex	May	191	156,701	47,083	211,959	67,533	28,487	3,412	92,453	7,076	198,820	93.80	13,139	5,200	—561	71,687
	5 mos.	191	825,910	233,219	1,112,981	297,215	170,323	17,926	543,480	37,238	1,066,013	95.78	46,968	6,923	—65,023	162,870
Louisiana Western	May	207	255,450	87,878	365,473	55,196	70,509	12,528	114,252	16,869	273,849	74.83	91,985	67,262	76,027	28,511
	5 mos.	207	1,202,388	484,015	1,799,121	275,060	403,528	58,132	599,632	83,547	1,441,459	80.12	357,661	217,628	206,495	—203,758
Morgan's La. & Tex. R.R. & S.S.	May	400	544,414	157,497	740,579	158,225	152,466	18,922	314,229	31,616	680,408	91.88	60,171	21,077	—4,392	37,926
	5 mos.	400	2,677,048	825,275	3,725,762	830,414	826,438	90,424	1,691,427	156,089	3,620,765	97.18	104,997	—131,131	—307,540	—794,580
Texas & New Orleans	May	475	435,639	145,091	613,653	169,233	218,502	11,810	368,158	24,124	797,632	129.98	—183,979	—204,455	—231,128	—178,267
	5 mos.	475	2,555,820	766,564	3,504,154	789,289	1,077,780	61,803	1,699,135	124,999	3,785,275	108.02	—281,121	—382,932	—564,678	—446,353
Spokane International	May	165	87,952	14,615	106,672	24,221	7,262	2,510	34,616	5,804	75,226	70.52	31,447	23,834	17,913	—1,017
	5 mos.	165	429,413	82,247	531,577	97,208	40,705	15,983	188,874	31,056	377,063	70.93	154,513	118,775	90,518	—81,131
Spokane, Portland & Seattle	May	549	423,553	134,208	609,303	62,004	72,692	7,827	219,868	21,514	391,909	64.32	217,395	136,577	128,948	121,867
	5 mos.	549	1,902,140	702,567	2,851,729	342,374	460,572	42,865	1,123,907	115,718	2,124,737	74.51	726,992	314,943	300,367	—165,176
Tennessee Central	May	292	118,545	49,198	174,119	48,576	44,361	4,699	116,769	11,252	225,657	129.60	—51,538	—56,200	—71,831	—68,024
	5 mos.	292	683,303	243,417	982,349	218,176	227,136	23,834	569,511	57,214	1,095,823	111.55	—113,474	—137,773	—238,596	—160,014
Term. R.R. Assn. of St. Louis	May	36	.....	.....	360,818	69,313	20,544	996	125,149	7,389	227,201	62.97	133,617	81,014	193,144	8,703
	5 mos.	36	.....	.....	1,830,213	417,053	168,353	4,841	708,706	43,116	1,360,564	74.33	469,748	235,687	797,009	120,188
East St. Louis Connecting	May	3	.....	.....	130,713	19,988	—1,896	352	55,400	3,518	77,361	59.18	53,352	50,687	34,933	48,760
	5 mos.	3	.....	.....	682,602	104,418	23,009	1,706	341,561	18,470	489,164	71.66	193,438	178,401	116,312	330,018
St. L. Merchants Bridge Term	May	9	.....	.....	294,606	43,093	18,228	995	156,607	6,717	225,640	76.59	68,966	52,344	72,877	35,701
	5 mos.	9	.....	.....	1,467,629	248,549	120,259	4,770	879,191	35,232	1,288,001	87.76	179,628	107,747	182,212	387,314
St. Louis Transfer Ry	May	6	.....	.....	90,108	12,286	63	211	32,107	1,895	46,562	51.67	43,546	43,183	38,617	559
	5 mos.	6	.....	.....	478,015	52,324	15,111	1,004	196,106	10,129	275,174	57.57	202,841	200,866	177,675	80,234
Texas & Pacific	May	1,953	1,857,215	693,948	2,730,645	601,224	448,418	51,661	1,088,600	97,263	2,313,966	84.74	416,681	287,989	227,299	263,030
	5 mos.	1,948	10,343,663	3,783,658	15,152,369	2,764,713	3,270,829	273,077	6,442,920	509,697	13,411,406	88.51	1,740,963	1,100,358	542,491	704,020
Toledo, Peoria & Western	May	217	78,124	41,710	127,825	33,358	61,798	3,222	80,413	8,080	186,933	146.24	—69,108	—69,108	—68,000	—62,260
	5 mos.	217	393,479	252,113	696,696	167,797	247,570	17,343	438,352	42,025	914,383	131.25	—217,687	—267,687	—237,719	—288,160
Toledo, St. Louis & Western	May	454	684,645	29,434	746,767	135,517	135,507	21,563	281,908	17,232	591,700	79.24	155,067	118,553	88,094	—58,290
	5 mos.	454	3,312,525	146,972	3,617,535	598,530	893,452	102,940	1,437,288	83,434	3,115,381	86.12	502,154	331,635	224,534	—310,073
Trinity & Brazos Valley	May	368	194,846	16,856	218,327	44,941	42,557	3,092	88,322	9,810	188,722	86.44	29,605	22,405	7,557	55,555
	5 mos.	368	943,001	88,061	1,068,712	246,961	264,027	15,525	487,948	51,151	1,065,139	99.67	3,572	—31,068	—112,168	242,981
Ulster & Delaware	May	128	50,218	35,849	112,686	20,056	27,830	4,691	74,971	8,299	136,553	121.18	—23,867	—30,484	—36,251	—17,165
	5 mos.	128	287,606	109,937	520,171	82,145	113,950	12,957	335,277	42,310	590,218	113.47	—70,046	—104,563	—121,409	9,524
Union R.R. of Penn	May	45	.....	.....	786,854	79,300	270,125	267	354,816	8,002	712,510	90.55	74,344	65,178	140,146	85,739
	5 mos.	45	.....	.....	4,125,929	311,764	1,202,277	1,412	2,252,743	41,018	3,809,214	92.32	316,715	263,130	516,875	558,725
Union Pacific	May	3,614	5,592,747	1,550,175	7,968,522	844,584	1,392,987	169,186	2,396,553	326,872	5,289,019	66.37	2,679,504	2,236,441	2,188,682	—20,937
	5 mos.	3,614	28,519,801	7,621,079	39,920,802	3,798,821	8,802,081	717,187	13,157,942	1,691,392	29,026,238	72.71	10,894,563	8,399,372	7,845,175	—4,424,962
Oregon Short Line	May	2,359	1,773,882	466,039	2,504,150	435,255	514,849	41,183	916,588	122,485	2,080,985	83.10	423,165	205,739	180,064	—713,947
	5 mos.	2,359	9,423,294	2,445,831	13,030,719	2,101,776	2,821,543	220,531	4,766,651	658,827	10,839,125	83.18	2,191,594	899,497	757,327	—4,057,247
Oregon, Wash. R. R. & Nav. Co.	May	2,223	1,555,165	498,043	2,281,127	467,419	331,666	67,264	967,106	128,890	1,991,253	87.29	289,874	108,712	28,462	59,959
	5 mos.	2,223	7,567,075	2,499,867	11,042,499	2,331,245	2,046,724	307,846	5,030,058	693,913	10,583,850	95.85	458,629	—447,963	—851,831	—2,278,076
St. Joseph & Grand Island	May	258	201,008	28,558	242,167	55,418	47,282	2,723	108,986	14,467	227,699	94.03	14,469	1,558	—21,903	27,976
	5 mos.	258	1,032,066	153,011	1,255,733	184,957	249,624	13,370	619,152	77,387	1,144,412	91.14	111,321	46,860	—28,254	84,803
Utah	May	98	81,528	656	82,633	24,922	36,256	320	22,210	3,792	84,294	102.01	—1,662	—9,766	—15,786	—53,539
	5 mos.	98	495,623	2,570	501,570	93,670	177,118	1,869	132,814	19,188	419,848	83.71	81,722	40,227	12,863	—251,340
Virginian	May	526	1,839,128	80,598	2,065,374	208,427	342,940	12,671	543,120	30,907	1,133,919	54.90	931,454	829,663	836,074	640,445
	5 mos.	526	6,677,844	379,057	7,592,409	942,132	1,620,183	53,283	2,355,079	158,163	5,130,190	67.57	2,462,218	1,981,094	2,124,791	909,136
Wabash	May	2,472	3,803,907	824,684	4,854,265	803,668	928,576	110,260	2,159,447	175,068	4,206,603	86.65	647,663	497,419	274,236	1,499,837
	5 mos.	2,472	18,714,734	4,031,470	24,093,299	3,708,725	4,987,691	565,708	11,085,729	913,704	21,413,808	88.88	2,679,491	1,955,384	886,189	4,749,403
Western Maryland	May	797	1,280,688	97,205	1,499,200	186,947	342,411	26,386	554,404	49,518	1,181,480	78.81	317,720	257,720	242,012	—6,240
	5 mos.	797	6,756,274	465,079	7,682,109	939,719	1,931,241	134,603	3,057,134	263,955	6,441,910	82.99	1,240,199	950,199	1,214,589	877,520
Western Pacific	May	1,011	715,087	196,359	965,943	221,170	201,153	31,783	394,500	37,092	907,403	93.94	58,540	—21,015	3,729	—226,355
	5 mos.	1,011	3,373,017	947,295	4,592,600	775,274	980,381	159,080	1,954,045	222,927	4,188,697	91.21	403,904	38,715	314,728	—585,702
Wheeling & Lake Erie	May	511	1,184,307	87,696	1,367,495	144,158	267,890	16,520	497,654	38,698	969,081	70.87	398,413	320,950	282,516	—190,111
	5 mos.	511	4,470,423	416,015	5,264,102	723,572	1,288,861	72,481	2,375,971	208,908	4,691,040	89.11	573,062	192,847	90,922	240,912

50 compound locomotives to the Baldwin Locomotive Works to be repaired and converted to simple locomotives. It was stated on the witness stand that the repair work was such as to very greatly increase the tractive effort of the engines, the difference being equivalent to 10 additional locomotives at 35,000 tractive effort each. J. N. Anderson, superintendent of shops at Milwaukee, Wis., and R. W. Anderson, superintendent of motive power, also testified. John R. Hale brought in cost charts to show that the 50 locomotives cost $731,196.84 more to repair in the Baldwin Works than if the work had been done in the St. Paul's own shops. He declared that the St. Paul could do such heavy repairs and that his cost figures had been properly weighed for the difference in wage scales, etc. The allocation of overhead cost on the work in the company's own shops, he said, was negligible. His figures showed that the average cost of 20 locomotives of the first lot sent to the Baldwin Works, December, 1919, was $27,527.59, compared with $16,978.37 in the company's own shop, or an average increase of $10,549.22 per locomotive and a total increase for the 20 of $210,984.40. L. Olds, director, and M. B. Gregg, member of the research bureau, Railway Employees' Department of the American Federation of Labor, putting in their intervening evidence, called attention to extensive charts and exhibits to prove the concentration of railroad, equipment and banking control in the hands of a few leaders. They also brought in material seeking to show that the high prices of steel maintained during the year, when other commodity prices had been steadily declining, "had been held up with the deliberate purpose of creating a winter of unemployment." Quoting the *Railway Age*, Mr. Olds undertook to show that the failure of the railroads to buy in normal amounts had been one of the principal causes of industrial depression. The carriers, he said, buy about 20 per cent of all commodities and "it is not stating the case too strongly to say that in the past the railways have been among the worst disturbers of general business conditions." The influence of railroad purchases of raw materials and unemployment was also introduced in detail.

Hearings closed on July 12 with the case of the Chicago, Burlington & Quincy, when Kenneth F. Burgess, attorney for the Burlington, asked that the commission grant new oral hearings at Washington, before the entire commission. New evidence was presented on the last day to show a different, and, it was believed, fairer basis of figuring repair cost other than that indicated by the commission. The new method shows cost in terms of tractive effort ton miles restored instead of comparing locomotive with locomotive.

Railway Returns for May

The railroads of the United States had a net operating income in May of $37,246,000, which was approximately $7,997,000 more than that for April. This is the largest amount earned by the railroads since last November, when their net operating income was $54,343,793. Eighty railroads—28 in the Eastern, 19 in the Southern and 33 in the Western districts—had operating deficits in May while in April the total was 91.

On the basis of the tentative valuation fixed by the Interstate Commerce Commission for rate making purposes under the Transportation Act, the amount earned in May would be at the annual rate of return of 2.41 per cent compared with 2.2 per cent the previous month, and the carriers fell short by $55,490,000 or 59.8 per cent of earning the amount contemplated by the Act.

The ratio of operating expenses to revenues during the month fell to 85.4 per cent as compared with 86.69 per cent in April and 87.19 per cent in March. Total operating revenues in May were $444,566,000 or 2.8 per cent less than they were during the same month in 1920, while operating expenses totaled $379,715,000 or a reduction of 13.2 per cent. The net operating income was $37,246,000 compared with an operating deficit of $5,519,000 in May one year ago.

During the nine months since September 1, 1920, when the guaranty period expired, the net operating income of the carriers has been $316,302,000, which on the basis of their tentative valuation, would be at the annual rate of return of 2.41 per cent. This sum is $469,696,000 below the amount contemplated to be earned under the rates established by the commission.

Traffic News

The Pere Marquette has inaugurated a new local freight service schedule coordinated with the present symbol train system and the plan is expected to provide a more prompt delivery of freight.

The Southern Pacific has placed three new steamships in service since last November and a tank steamer is to be delivered the latter part of 1921. The new steamships are the El Estero, El Isleo and the El Lago, while the tank steamer has been named Tamiahua.

The Baltimore & Ohio reports that, with the week ending June 4, 1,194 carloads of freight had been secured as a result of a campaign on that road by veterans' and other employees' for the solicitation of traffic. The road also reports that a substantial passenger business has been derived through the same agency.

Representative Christopherson, of South Dakota, introduced a resolution in the House of Representatives on July 6 requesting the Interstate Commerce Commission to take up for consideration forthwith the matter of freight rates, giving especial attention to the rates on agricultural products including livestock, with a view of promulgating new and lower schedules.

Shipments of fruits and vegetables throughout the United States this season are greater than last, according to reports received by the Bureau of Markets of the Department of Agriculture. Carload shipments for the season up to June 4, 1921, the report shows, total 367,741 compared with 309,181 during the corresponding period in 1920, or an increase of 58,460 cars.

Notice of a 5 per cent reduction in freight rates on all lines in the state of Michigan, operating south of the main line of the Michigan Central, was filed with the Michigan Public Utilities Commission on July 5. Representatives of the Michigan Traffic League appeared before the commission, following notice of the decrease, to protest against the new rates. They argued that with the present system of zone rates the reduction would simply add another zone to the state and further complicate present conditions.

The output of soft coal during the week ended July 2, according to the weekly bulletin of the Geological Survey, was 7,591,000 net tons, or 125,000 tons less than that of the week preceding. The bulletin says the decline was probably due in part to the approach of the Fourth of July holiday. The cumulative production for the first half of the year was 196,000,000 tons, which is 41,000,000 tons behind the average for the eight preceding years. But, the bulletin says, before concluding that this subnormal production indicates a future shortage, the greatly decreased consumption of coal caused by the depressed condition of industry in general should be considered. Cumulative production is but little less than that in 1914, which was also a year of general business depression. In that year no shortage of soft coal occurred.

The annual convention of the American Association of Traveling Passenger Agents, will be held at the Hotel Utah, in Salt Lake City, Utah, from September 12 to 14, inclusive. C. H. Cutting, assistant general passenger agent for the Los Angeles & Salt Lake, and chairman of the executive committee of the association, announces that the program will begin the morning of September 12 with an address of welcome by Governor Mabey of Utah, while the afternoon will be devoted to a sight-seeing trip about Salt Lake and vicinity, as will the afternoons of September 13 and 14, with business sessions to be held in the morning. Harry M. Cushing is chairman of the local entertainment committee, while H. W. Stoutenborough heads the local reception committee. Gordan G. Noble of Philadelphia, Pa., president of the association, will deliver an address at the opening session.

The board of governors of the Southern Traffic League has requested that the Interstate Commerce Commission make a formal inquiry into railroad freight rates to determine whether their reduction would aid business at this time. The board took the position that the commission should not consider the problem on the basis of mere letters of protest from shippers and carriers, but should institute formal proceedings of investigation, at which the facts can be developed from the sworn testimony and thus bring about a more orderly consideration of the question. In a letter to the commission the board said that whereas the President, Cabinet officers and members of Congress are urging that reduced rates be established as soon as possible, the commission has put itself in a position where it is being criticized for its failure to assist the administration and because of its handling of the problem on a purely informal basis. The letter asserts that if the commission should institute a formal investigation, much futile clamor for reduced rates would cease and, on the other hand, those whose claims are based upon merit would be able to present their arguments in an orderly way and receive a decision that would be controlling.

Traffic Statistics for April

The number of tons of revenue freight carried one mile by 174 Class I roads in April, not including switching and terminal companies, was 22,783,939,000 as compared with 27,323,760,000 in April, 1920, according to the monthly bulletin of traffic statistics published by the Interstate Commerce Commission. The average haul per road was 190 miles as compared with 185 miles last April. The average revenue per ton mile was 1.334 cents. The revenue passengers carried one mile were 2,832,811,000 as compared with 3,552,683,000. The average miles per passenger per road was 33.98 as compared with 36.09. The average revenue per passenger mile was 3.19 cents.

Anthracite Shipments—June, 1921

The shipments of anthracite for June as reported to the Anthracite Bureau of Information at Philadelphia, amounted to 6,031,937 gross tons, as compared with 5,793,895 tons in May, an increase of 238,042 tons. Cumulative shipments for the first three months of the present coal year beginning April 1, have amounted to 17,793,297 gross tons, as compared with 17,290,046 tons for the corresponding period in 1920, an increase of a little over 500,000 tons. The average monthly shipments for the present coal year have been 5,931,000 tons, against 5,780,560 tons for the coal year 1920-21, and 5,923,557 tons in the coal year 1919-20, and have exceeded the averages for any preceding years with the exception of the two war years 1917 and 1918, when washery coal recovered from the culm banks furnished a temporary excess supply.

Shipments by originating carriers were as follows:

	June, 1921	May, 1921
P. & R. R. W.	1,157,738	1,108,476
L. V. R. R.	1,069,521	1,027,688
C. R. R. of N. J.	571,213	544,716
D. L. & W. R. R.	1,009,119	915,191
D. & H. Co.	763,893	753,039
Penna. R. R.	441,693	409,027
Erie R. R.	555,882	630,574
N. Y., O. & W. R. R.	163,742	153,809
L. & N. E. R. R.	299,136	251,375
Total	6,031,937	5,793,895

The bureau estimates that domestic consumers have in their cellars one and a quarter millions more coal than they had a year ago.

THE CHEAPNESS OF FREIGHT TRANSPORTATION in the New York State Barge Canal was discussed at length in the meeting of the Great Lakes, Hudson & Atlantic Waterways Association at Buffalo, N. Y., on June 29; and representatives of the Standard Oil Company and the General Electric Company told of the advantages they had derived from using the canal for certain classes of traffic. The Standard Oil Company runs barges between Rochester and New York City. The General Electric Company was able to use boats for cargoes in both directions between Schenectady and New York City.

Commission and Court News

Interstate Commerce Commission

The commission, upon its own motion has ordered an investigation into the question of the transportation of strawberries by express in carload lots in passenger trains from Florida to northern markets, and of requiring the express companies or the railroads to provide themselves with and furnish refrigerator cars for use in that transportation.

The commission has further suspended until August 29, the operation of an item published in Agent E. B. Boyd's tariff which proposes to reduce from 60,000 lb. to 33,000 lb., the carload minimum weight of sugar, from points in Colorado, Idaho, Kansas, Nebraska and Utah to destinations in Arkansas, Colorado, Iowa, Kansas, Louisiana, Missouri, Nebraska, New Mexico and Oklahoma.

The commission has rendered a decision finding that the charges for the transportation of passengers in sleeping and parlor cars required by state authority to be maintained by railroads within the state of Alabama are discriminatory against interstate commerce and the railroads were ordered to increase these charges by the amount of the increase authorized by the commission in the general rate advance case. The Alabama state commission had ordered a discontinuance of the surcharge for intrastate traffic after December 23, 1920.

The Public Utilities Commission of Kansas has filed a petition with the Interstate Commerce Commission asking a reduction in the interstate freight rates on grain, grain products and hay between all points in the Western group. The petition states that the latest advance in rates of 35 per cent in the Western group "vitiates all attempts at a readjustment toward economic normalcy" and is under present conditions unjust, unreasonable and discriminatory. It is stated that owing to a reduction in the market price of grain and hay unaccompanied by a reduction in the freight rate, the producers of Kansas are financially in a precarious position and that the result is destroying business throughout the West. The members of the Kansas commission, accompanied by members of the Kansas delegation in Congress, were to call on Chairman Clark of the commission on Thursday of this week to present the petition and ask for early action.

The Interstate Commerce Commission has made public a tentative report of an examiner representing the first formal case before the commission involving the reasonableness of rates for the transportation of oil through pipe lines. The examiner finds that the rates for the transportation of crude oil by pipe line from the mid-continent field of Oklahoma and Texas to Franklin and Lacy Station, Pa., are not unreasonable, but that the rule of the Prairie Pipe Line Company requiring shipments to be tendered in quantities of not less than 100,000 barrels is unreasonable to the extent that it requires tenders in excess of 10,000 barrels. The commission was asked to reduce the rates by the amount of the so-called gathering charge covering the transportation from producer's tanks to the trunk line of the pipe line system, which rate when the complaint was filed was 12 cents, but in September, 1920, was increased to 20 cents. The commission was also asked to reduce the minimum to 2,000 barrels. The report says the only evidence offered as to the reasonableness of the rates was certain statistical tables pertaining to the earnings of the pipe line companies. The present minimum was held by the examiner to be unreasonable on the ground that it required an investment on the part of the shipper of approximately $450,000 for tankage and oil in order to obtain service.

Western state commissions are being asked to join the Kansas Public Utilities Commission in a petition to the Interstate Commerce Commission for a general investigation of rates on grain, grain products and hay on the western railroads. At a conference with the chairman of the Kansas commission and the Kansas

delegation in Congress on July 7, at which the Kansas commission presented a petition asking the Interstate Commerce Commission to reduce the rates. Chairman Clark of the Interstate Commerce Commission asked whether it would be agreeable, if an investigation should be ordered, for the representatives of the grain producing states to appear before the commission in Washington and thus eliminate the necessity for holding various hearings in the different states. After the meeting J. E. Benton, solicitor for the state commissioners' association, telegraphed to the western state commission to get their views, in the hope that the plan of holding a single hearing would expedite the case. Chairman Clark said the commission realized the serious situation in the agricultural states and that it would approach the matter sympathetically. Chairman Reed, of the Kansas commission, predicted a shortage of box cars in Kansas within the next few days. He said the railroads have not furnished as many cars as they have promised and complained because some of the stronger western roads do not make more progress in repairing bad order cars.

Regulations for Transportation of Explosives

The Bureau of Traffic of the Interstate Commerce Commission has issued the following notice to carriers:

"By amendment to the penal laws of the United States, approved March 4, 1921, the commission is required to formulate regulations for the safe transportation of explosives and various other classes of dangerous articles which shall be binding upon all common carriers that transport such articles by land or by water. Such regulations are law to the carriers as well as to the shippers and they cannot be changed except by act of Congress or by this commission.

"In the interest of safety and in view of the requirements of the statute, it is important that the regulations should be given the widest publicity. For convenience of tariff reference and in the interest of accuracy and authoritative publication such publicity may and should take the form of a separate tariff duly filed with the commission by all carriers affected and regularly posted under the provisions of section 6 of the interstate commerce act. Such a tariff circular may be most economically prepared and filed by a joint agent acting under powers of attorney granted by the respective lines. The Bureau of Explosives, 30 Vesey street, New York, N. Y., has expressed willingness to undertake publication and filing upon due execution of appropriate powers of attorney, and classification committees have endorsed that plan of publication. The bureau is in constant touch with shippers and carriers and seems peculiarly fitted to act as joint agent in this matter. The commission has no especial preference but makes free to express the thought that publication and filing by the bureau will be found more economical and satisfactory. It will expect publication and filing in tariff form within a reasonable time. It will afford the carriers a reasonable opportunity to formulate their plan of publication but some plan must be decided upon and put into effect promptly."

Personnel of Commissions

Charles F. Staples, who has been associate director of valuation of the Interstate Commerce Commission, has been appointed acting director of valuation. Mr. Staples was formerly chairman of the Minnesota Railroad and Warehouse Commission.

J. A. Little, of the traffic department of the Railroad Administration, who has been in charge of short line adjustments, has been appointed to take charge of rate analyses and the supervision of accounting regulations for the Nebraska Railway Commission. Mr. Little was formerly connected with the North Dakota Commission and during the period of federal control was with the Railroad Administration handling car service matters in the short line section.

Court News

The State of Texas' temporary injunction withholding the scrapping of the Southwestern railway, extending 27 miles from Henrietta to Archer City, has been set aside by the Federal Court. It is expected that as a result of the decision, the road will shortly be junked.

Foreign Railway News

German Interests to Build Railways in Bulgaria

LONDON

Hugo Stinnes, the German industrial leader, has formed a German-Bulgarian company for the construction of railways in Bulgaria. The new work involves some 170 miles of line.

New Zealand Railway Orders

New Zealand has placed orders with British firms amounting to some $8,000,000 for 12,000 tons of rails, 2,500 freight cars and 45 locomotives. The New Zealand government has also allocated about $25,000,000 for the development of hydro-electric works in that country.

Belgium Makes Lowest Bid on Rails for Argentina

According to Commercial Attaché Feely at Buenos Aires the lowest bids on 7,000 tons of steel rails for the Argentine Government Railways which were opened on May 20 were $42 (at the current rate of exchange) per metric ton (2205 lb.) by a Belgian concern and $44 by a German concern. The lowest American bid was $58.

Great Western of Brazil to Extend Lines

The Great Western of Brazil has made arrangements with the federal government for a number of extensions in the states of Parahyba, Pernambuco and Alagoas, the work to be inaugurated within 60 days after specifications are approved. To cover the expense of the work the government will issue some $24,000,000 of securities (milreis to dollars at par).

Railway Commission Appointed in Peru

The government of Peru has, according to Commerce Reports, recently appointed a commission to "study the needs of the railways and to formulate changes in the general railway ordinance." The occurrence of several serious accidents lately, it is said, which have been attributed to faulty rolling stock, gave rise to the discussion which brought the matter to the attention of the government. The Minister of Public Works will head the new commission.

Second Hand Railway Material for Mexico

Second-hand railroad construction material to the value of several million dollars may be purchased by the Mexican government for use upon extensions of the National Railways of Mexico which are now being built, according to advices received here from the City of Mexico. It is stated that former Governor W. P. Hobby of Texas is now in the capital and that he has submitted a proposition to President Alvaro Obregon for the sale of this material. Most of the rails which are offered come from abandoned logging roads in East Texas. Mr. Hobby is also negotiating for the sale of many thousand railroad crossties.

English Coal Strike and the Railways

LONDON

Statistical reports have just been published showing how the first month (April) of the English coal strike affected the railways. The number of passenger journeys, excluding commutation travel, was 16.48 per cent less than in the preceding month and passenger train miles were reduced by 20.38 per cent. The total freight tonnage decreased 67 per cent as compared with April, 1920, and there was a decrease of 62 per cent in ton-miles. The average car load was 3.70 tons as against 5.45 tons in April, 1920, and the average train load was 94 tons as against 133 tons, or a decrease of 32.1 per cent and 29.3 per cent, respectively. The number of freight cars under and awaiting repair on April 30, 1921, was 3.1 per cent as compared with 5.4 per cent at the end of April last year.

Proposed Extensions of a Mexican Railway

Financial interests which are said to be identified with Wells, Fargo & Company have purchased the Pachuca, Zimapam & Tampico Railroad, according to advices received from Pachuca. It is stated that the owners have taken preliminary steps to extend the line to Tampico, a distance of about 300 miles. Engineers have been in the field for some time making surveys of the route of the proposed extension. At Pachuca direct rail connection with the City of Mexico will be obtained. The project involves difficult engineering and construction work, on account of the almost precipitous decline of the mountains to sea level which the track will have to negotiate. This projected short line between Tampico and the capital has been talked of for many years and several different attempts to build the road have been made. The National Railways of Mexico had the line under construction at the time the Madero revolution was started ten years ago, but the project had to be abandoned on account of the upheaval.

New General Manager for Great Western Railway (England)

LONDON

Felix J. C. Pole has been appointed general manager of the Great Western Railway (England), superseding Charles Aldington, C. B. E., who has been compelled to resign owing to ill-health.

Mr. Pole entered the service of the Great Western Railway in the telegraph department at Swindon in 1891. He passed through the electrical engineer's and civil engineer's departments and in 1904 received an appointment on the general manager's staff, becoming assistant general manager in 1919. Mr. Pole was editor of the Great Western Railway Company's official magazine, and was the first to advocate the "Safety First" movement in Great Britain. He is an authority on labor questions, having been secretary to the company on the staff concilation boards. He is a member of the Central Wages Board, and a strong supporter of the recent agreement between the railway companies and the trade unions.

American Concern to Build Important Bolivian Railroad

The Ulen Contracting Corporation of New York and Chicago has been awarded a contract by the Bolivian government for the construction of a railway from Atocha, Bolivia, to Villazon on the Argentine frontier. This line will connect the Bolivian system with that of Argentina and will shorten considerably the time necessary to make the trip from this country to Buenos Aires. This connecting line will be 128 miles in length and of meter gage, the Bolivian standard. The company will not only build the road but also all necessary buildings and will equip its shops and purchase motive power and rolling stock. In financing the work the company has assisted by purchasing $7,000,000 of bonds from the Bolivian government. Surveys are being made now and work will begin by January 1. The country which the road must negotiate is quite difficult and five years are allowed for the completion of the line.

The Ulen Corporation is at present working on sanitation plants at La Paz and Cochabamba, Bolivia, involving some $2,250,000. This work is about 50 per cent completed. The company is also building the 18-mile Shandaken water tunnel for the New York Board of Water Supply.

Spanish Railway Bill Proposes Government Ownership

Senor La Cierva, Minister of Public Works of Spain, has presented in the Spanish congress a bill providing for the gradual Nationalization of the railways of Spain, according to the Railway Gazette (London). The concessions to private lines were for 99 years and most of them have 40 years to run. This time has been reduced to 30 years in the new bill, giving the government the right, however, to foreclose at any time by the purchase of the outstanding capital stock at the rate of the average dividend for the past 10 years based on a 25 years' purchase.

Meanwhile the government is to enter into a partnership with each company, each company to contribute its present capital stock and the government to contribute the funds it has already advanced and advances hereafter for increased wages and improvements. The capital thus contributed by the railways will receive a guaranteed dividend equal to the average for the past 10 years, but not more than 3 per cent. The first distribution of profit is to be 5 per cent to the government on its contribution. After the payment of the guarantee to the owners and the 5 per cent to the government there is to be paid a preference dividend to the owners and the government (that of the government to be 2 per cent on its investment) out of the remaining funds. There is to be a further dividend of 1 per cent to the companies and a bonus of 1 per cent to the personnel, if the funds are available, and further profits are to be distributed pro rata between the companies and the government.

Rates are to be fixed to pay all expenses, but the state may fix an unremunerative tariff on guaranteeing to cover the resulting deficit. Foreigners may not number more than one-third the board of directors of any company and no equipment or supplies to be had in Spain are to be purchased abroad. The operation of the roads is to be managed by a "Supreme Railway Council," on which representatives of the government, the owners, the employees and the public are to sit. Provision is made for the issue of loans for additions and improvements.

John Fritz Medal Awarded to Prominent English Metallurgist

As the seventeenth recipient of the John Fritz Medal, Sir Robert A. Hadfield, Bt., D.S., D.Met., F.R.S., was honored at the engineering conference of the Institution of Civil Engineers, England, on June 29. Sir Robert was unanimously chosen medalist for the year 1920, by the John Fritz Medal Board of Award for his invention of manganese steel. The presentation was made by a committee made up of Ambrose Swasey, president, Warner & Swasey Company, Cleveland, and chairman of the John Fritz Medal Board of Award, who delivered the presentation address; Dr. Ira N. Hollis, president, Worcester Polytechnic Institute, who presented a memorial address on behalf of the United Engineering Societies; Charles T. Main, representing the American Society of Civil Engineers; Dr. F. B. Jewett, representing the American Institute of Electrical Engineers; Christopher R. Corning, delegate from the American Institute of Mining and Metallurgical Engineers; Colonel Arthur S. Dwight, representing the American Institute of Mining and Metallurgical Engineers; John R. Freeman, past president of the American Society of Mechanical Engineers, and Charles F. Rand, member and secretary of the John Fritz Medal Board of Award. The presentation was attended by George Harvey, the American Ambassador to Great Britain, Lord Bryce and by high officials of the British government.

R. A. Hadfield

Sir Robert was born at Sheffield, England, November 29, 1859. He was educated at the Sheffield collegiate school and entered his father's works in 1876, becoming chairman and managing director of Hadfields, Ltd., in 1888. His discovery of manganese steel dates from the year 1882. Sir Robert is a past president of the British Iron and Steel Institute, a past president of the Faraday Society and is an honorary member of many American scientific societies. He was made a baronet in 1917.

Advantage was taken of this occasion by the technical societies of America for officially expressing the obligation which the United States and the world generally owes to the engineers in Great Britain for the part they played in winning the war.

Equipment and Supplies

Locomotives

The Pekin-Mukden Railway (China) has ordered 5 Pacific type locomotives, from the Baldwin Locomotive Works.

The Chinese Government Railways, reported in the *Railway Age* of April 15, as inquiring for 35 locomotives, have placed an order with builders in Belgium, for 30 Prairie type locomotives and 6 English type locomotives.

The National Railways of Mexico have ordered 8 Mikado type locomotives from the Baldwin Locomotive Works. These are in addition to the 10 Pacific type locomotives ordered from the same builders as reported in our issue of July 9.

Freight Cars

The Toledo & Ohio Central is asking for prices on the repairing of 250 steel coal cars of 50 ton capacity.

The Tennessee, Alabama & Georgia has renewed its inquiry for 100 50-ton gondola cars and 150 50-ton box cars.

The Western Pacific has ordered 25 30-yard extension side dump cars, of 50 tons capacity, from the Clark Car Company, Pittsburgh, Pa.

The Chicago, Indianapolis & Louisville has let 100 underframes and 100 gondola superstructures to the Haskell & Barker Car Company This road is also in the market for repairs on 1,000 gondola cars.

The Chinese Government Railways, reported in the *Railway Age* of January 28, as inquiring for from 500 to 1,500 freight cars have placed orders for 300 cars with the American Car & Foundry Company, 600 with the General American Car Company and 240 cars with builders in Belgium.

Iron and Steel

The Great Northern is inquiring for 200 tons rolled steel wheels.

The Illinois Central is inquiring for 50 tons of locomotive forgings.

The Chicago, Indianapolis & Louisville is inquiring for 100 tons rolled steel wheels.

The Lehigh Valley has ordered 2,700 tons of steel, for a transfer table at its Claremont, Jersey City, N. J., terminal.

Mitsui & Company, New York, has ordered from the U. S. Steel Products Company, 1,850 tons of steel bridge material, for the Hanshin Electric Railway, Japan.

Track Specialties

The Chicago, Burlington & Quincy is inquiring for 200 tons universal plates and angles.

The Southern Pacific is in the market for 4,800 kegs of spikes and 3,300 kegs of track bolts.

The Peoria & Eastern is inquiring for 7,000 A. S. C. E. rail wrought iron tie plates f. o. b. its own tracks.

The Cincinnati Northern is inquiring for 29,900 tie plates for 80 lb. A. S. C. E. rail, f. o. b. its own tracks.

The Cleveland, Cincinnati & St. Louis is inquiring for 155,000 Dudley rail and A. S. C. E. rail tie plates f. o. b. its own tracks.

Mitsui & Company, New York, has ordered from the U. S. Steel Products Company, 63 sets of railroad switches for the Tokio Municipal Railway.

Miscellaneous

The Great Northern is inquiring for 100 tons of wire products—fencing, etc.

The Baldwin Locomotive Company has been given a large order for locomotive forgings, for export to India.

The Shanto Railway has ordered, through Mitsui & Co., New York, from the Consolidated Steel Corporation, 900 steel tires for freight car wheels.

The Norfolk & Western will receive bids at Roanoke, Va., until 12 o'clock noon, July 20, for: 18 steel coil engine truck springs; 200 D-bevel soft steel bars; 120 rods of wire fencing; 2,500 pairs 85-lb. steel angle bars; 100,000 tie dating nails; parts for electrical apparatus, and electrical material.

Signaling

The Cleveland, Cincinnati, Chicago & St. Louis has placed orders with the Hall Switch & Signal Company, Garwood, N. J., for 153 style "LN" upper quadrant, three-position semaphore signals, which will be installed by the railroad company's forces.

Trade Publications

Waterproofing.—Bulletin No. 101 issued by the Minwax Company, Inc., New York, describes the structures built by that company in connection with the track elevation project at Tonawanda, N. Y., with particular reference to the manner in which they were waterproofed. Various details of the expansion joints, culverts, gutters, down-spouts, etc., are described and illustrated with sketches. The particular object in mind in the preparation of the matter in this bulletin has been to point out the practical methods of handling the various details involved in the typical waterproofing project.

Breakdown Instructions, The Young Locomotive Valve Gear.—An eight-page pamphlet, bound in stiff paper cover, has been issued by the Pyle National Company, Chicago, describing the proper methods of procedure in case of the failure of various parts of the valve motion, in order that the locomotive may proceed on one side. Introductory to the breakdown instructions is a clear and concise illustrated description of the operation of the Young valve gear, which in the case of a number of the failures enumerated will continue to provide lap and lead motion on the affected side in addition to complete operation of the valve on the unaffected side.

Lackawanna Steel Sheet Piling.—The Lackawanna Steel Company, Lackawanna, N. Y., has issued bulletin No. 109, 172 pages, illustrated, which is descriptive of the various types of sheet piling manufactured by this company and its application to construction work. The bulletin in reality is a text book on the application of sheet steel piling in construction work, wherein water, earth or other material is to be retained as in cofferdams, open caissons, foundations of bridges and buildings, etc. The application of sheet piling to all of these various classes of work is not only described in the written matter but is also illustrated by a large number of photographs showing the actual installations. Other photographs and drawings show all of the various types manufactured by this company as well as the different combinations for which they are adapted. Other sections of the bulletin describe and illustrate various methods for handling the piling under unusual or difficult conditions.

Three Unidentified Trespassers were killed on June 30, when nineteen cars of a Missouri, Kansas & Texas freight train went into a ditch one mile north of Troy, Tex., and were destroyed by fire, originating in an oil car of the train. Two of the cars destroyed carried live stock.

Supply Trade News

A. F. Zacher has resigned as district manager of the Buffalo office of the **Economy Fuse & Manufacturing Co.**, Chicago.

The Walworth Manufacturing Company has removed its general offices from its Boston factory, First and O streets, to Pearl and High streets, Boston, Mass.

John Hyland has been appointed representative of the **Globe Seamless Steel Tube Company,** with headquarters in the Fourth National Bank building, at Atlanta, Ga.

The National Machinery Company, Tiffin, Ohio, has opened an eastern sales office in room 637, Knickerbocker building, Broadway and Forty-second street, New York City, in charge of **F. J. Mawby.**

G. A. Nelson, special representative of the **Waterbury Battery Company,** of Waterbury, Conn., has been elected vice-president and general sales manager, with headquarters at New York. Mr. Nelson was born in Chicago, and started his business career in that city with E. W. Gillett. In 1896 he was in Toronto, Ontario, in temporary charge of the Canadian business of E. W. Gillett, of Chicago. The following year he came to New York to open up and become manager of a branch factory of the Champion Chemical Works, Chicago, grinders and packers of caustic soda and similar chemicals. In 1901 he was elected secretary and treasurer of the Gordon Primary Battery Company, and continued his connection with that company until January 1, 1916, at which time he accepted the agencies for several lines of railway tools and supplies. In March, 1917, he was appointed special representative of the Waterbury Battery Company, and he now becomes vice-president and general sales manager of the same company, as noted above. Mr. Nelson has been an active member at the various railroad conventions. Since 1914 he has been secretary-treasurer of the Railway Telegraph & Telephone Appliance Association.

G. A. Nelson

Victor M. Summa has opened an office as general consulting engineer at 415 Merchants-Laclede building, St. Louis, Mo. Mr. Summa was formerly in the service of the American Brake Company, St. Louis.

The Dominion Oxygen Company, Ltd., will begin work in July on a new oxygen plant at Montreal, Que., to cost $250,000. The building will be 100 ft. by 100 ft., and will be a duplicate of the company's Toronto plant.

Barbour, Love & Woodward, Inc., machine tool dealers, formerly at 149 Broadway, has moved its temporary office and warehouse from 131 Washington street to its new offices and show rooms at 45 West Eighteenth street, New York City.

The **Badger Concrete Mixer Company** of Milwaukee and Watertown, Wis., has purchased a 27½ acre tract of land at Winthrop Harbor, Ill., north of Chicago, where it will erect a factory unit, 80 ft. by 260 ft. One-half of the tract is to be used for the erection of dwellings for its workmen and officers. In addition to its own line the company will manufacture at this plant the McVicker tie plate for the Railway Safety Tie Company. It is expected that the factory will be completed for occupancy early in the Fall.

The Goddard & Goddard Company, Inc., Detroit, Mich., has opened an eastern sales office and permanent exhibition of milling cutters in the rooms of the Manufacturers Exhibit, Inc., 45 West Eighteenth street, New York. **James W. Sederquist,** eastern sales manager, is in charge of the sales office and exhibit.

The **Dressel Manufacturing Corporation,** New York, which is a reorganization of the **Dressel Railway Lamp Works,** has increased its capital to $1,150,000 and has plans nearing completion for building a new and larger plant at Buffalo, N. Y. **Wliliam Smith,** who is president of the new corporation, is well known in the railroad field, having been in the railroad and railway supply business for over 30 years. He resigned as vice-president and general manager of the Montana Southern Railway to assume his new duties. **F. W. Dressel** is vice-president of the new corporation and **F. H. Gregory** is secretary and treasurer.

The Western Electric Company has opened a new warehouse at 395 Hudson street, New York City. The building occupies the entire square block bounded by Hudson, West Houston, Greenwich and Clarkson streets, an area of 338 ft. by 200 ft., with a total floor space of 706,000 sq. ft. Several departments of the Western Electric have already moved into the new quarters, but the New York shops and the supply divisions of the Eastern district territory, which includes New York, New Jersey, Pennsylvania and the New England states, and the International Western Electric Company will not remove to the same building at the present time.

Crerar, Adams & Company, Chicago, Ill., western sales agent for **B. M. Jones & Co., Inc.,** New York, will in future carry a complete stock of Double Mushet high speed steel, also Titanic carbon tool steels, and can supply Taylors' Best Yorkshire Iron, in Chicago. **F. W. Clifford,** associated for a number of years with Crerar, Adams & Co., as a tool steel expert, will in future specialize on Mushet and Titanic tool steels. The **Connelly & Kendal Company,** 115 St. Clair avenue, N. W., Cleveland, Ohio, is now managing the Jones company's Cleveland branch, and **R. G. White,** who was manager of the Cleveland branch, has been appointed special western representative, with headquarters in Chicago.

Obituary

Henry S. Manning, who retired in 1905, as senior partner of Manning, Maxwell & Moore, New York, died on July 9, in New York City, at the age of 76. Mr. Manning established the firm of H. S. Manning & Co., New York, in 1880, its name was changed to Manning, Maxwell & Moore, and in 1905, the present corporation was organized. After leaving Manning, Maxwell & Moore, Mr. Manning became interested in the firm of Milliken Brothers, New York. He was a member of the executive committee of the Kansas City, Mexico & Orient Railroad.

Albert Taylor, manager of the North Atlantic district, of the Electric Storage Battery Company, Philadelphia, Pa., died suddenly on July 6. He was taken ill in his office in New York City and died a few hours later in a hospital. Mr. Taylor was born in Liverpool, England, on February 6, 1864, and in 1884, he was graduated from Princeton University. He served an apprenticeship with the Edison General Electric Company and in 1885, joined the United States Electric Company. This company was absorbed by the Westinghouse Company in 1889, and in the Spring of 1890, Mr. Taylor became associated with the Stanley Electric Manufacturing Company, Pittsfield, Mass., remaining in its employ for eight years. In 1898, he entered the service of the Electric Storage Battery Company, as a salesman in its New York office. In January, 1900, he was made assistant manager; in March of the same year he was appointed manager of the New York office, and since February, 1920, he was manager of the North Atlantic district.

Railway Financial News

ARKANSAS & LOUISIANA MISSOURI—*Authorized to Issue Stock.*—The Interstate Commerce Commission has authorized this company to issue at par for cash $1,000,000 of capital stock, the proceeds to be used in acquiring and rebuilding a line from Monroe, La., to Crossett, Ark., formerly owned by the Arkansas & Louisiana Midland.

ATLANTIC COAST LINE.—*Not to Absorb L. & N.*—There has been no consideration of a consolidation of the Atlantic Coast Line and the Louisville & Nashville, according to a statement issued by Henry Walters, chairman of the boards of both companies.

ATCHISON, TOPEKA & SANTA FE.—*To Lease California Southern.*—This road will take over the properties of the California Southern, under a one-year lease, with an option to buy, effective on August 1. The railroad is 50 miles long and extends from Rice to Ripley and is reached from Barstow via the Santa Fe-Phoenix cutoff.

BALTIMORE & OHIO.—*Authorized to Issue Bonds.*—The Interstate Commerce Commission has authorized an issue of $1,624,000 of refunding and general mortgage 6 per cent bonds for pledge and repledge from time to time as collateral security for short-term notes. The subsidiaries of the Baltimore & Ohio were also authorized to issue various bonds upon its order to the trustees under certain mortgages.

CALIFORNIA SOUTHERN.—*Leased to A. T. & S. F.*—See Atchison, Topeka & Santa Fe.

CANADIAN NORTHERN.—*Bond Sale.*—A banking syndicate, composed of the National City Company, Guaranty Trust Company of New York, Blair & Co., Inc., Lee, Higginson & Co., Bankers Trust Company and the Continental and Commercial Trust and Savings Bank of Chicago, have sold $25,000,000 25-year 6½ per cent sinking fund gold debenture bonds at 96½ and interest to yield about 6.80 per cent.

The bonds are non-callable, dated July 1 and due July 1, 1946. A sinking fund of $500,000 per annum is to be made available in equal installments during each six months for the purchase of bonds in the market, if obtainable at or below par. The bonds are the direct obligation of the Canadian Northern Railway Company which is owned by the government of the Dominion of Canada and forms part of the Canadian National Railways System, which will consist of over 22,000 miles, extending from the Pacific Ocean and reaching every important traffic center in Canada.

CHARLES CITY WESTERN.—*Authorized to Issue Bonds.*—The Interstate Commerce Commission has authorized an issue of $373,600 of 10-year 6 per cent first mortgage notes, $200,000 of the amount to be pledged and the remainder to be sold at not less than par.

CHICAGO, ROCK ISLAND & PACIFIC.—*Authorized to Issue Equipment Notes.*—This company has been authorized by the Interstate Commerce Commission to issue $6,470,230 of rent notes for the purchase of equipment through the National Railway Service Corporation, to guarantee the obligations of the service corporation to the United States for a loan of $1,568,540 and to pledge securities with the Secretary of the Treasury to secure the loan.

DENVER & RIO GRANDE.—*I. C. C. to Investigate Relations with W. P.*—See article on another page of this issue entitled, "Will Investigate Relations of Western Pacific."

DENVER & RIO GRANDE WESTERN.—*Authorized to Issue Stock.*—See article on another page of this issue entitled, "Will Investigate Relations of Western Pacific."

EL PASO & SOUTHWESTERN.—*Annual Report.*—The corporate income account for the year ended December 31, 1920, compares with the previous year as follows:

	1920	1919
Operating revenues (March 1-Dec. 31)	$11,865,369	
Operating expenses (March 1-Dec. 31)	8,826,313	
Net from railway operation	3,039,057	
Taxes	1,109,872	
Railway operating income	1,928,900	
Miscellaneous operating income (credit)	4,301	
Total operating income	1,924,599	
Income from lease of road	689,186	$4,135,114
Gross income	3,524,814	5,599,094
Deduct—Rent for leased roads	1,948,859	1,927,032
Total deductions from gross income	2,474,500	2,470,384
Net income	1,097,314	3,128,710
Dividend appropriations	1,097,314	2,000,000

The annual report of the El Paso & Southwestern will be reviewed editorially in an early issue.

FLINT BELT.—*Pere Marquette Applies for Control.*—See Pere Marquette.

GRAND TRUNK.—*Arbitration Proceedings Ended.*—The arbitration proceedings which are eventually to decide the value to be allowed to the English holders of first, second and third preferred and the common stock of the Grand Trunk Railway, now taken over by the Dominion Government, together with actual ownership and control of the whole Grand Trunk system, came to an end in Montreal on July 8. The board has been in session, with one break of eight weeks, since February 1.

GREAT NORTHERN.—*Bond Syndicate Ends.*—The banking syndicate which sold $230,000,000 Northern Pacific-Great Northern joint 15-year 6½ per cent bonds was dissolved July 5.

ILLINOIS CENTRAL.—*Asks Authority to Issue Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue and sell $8,000,000 of 15-year 6½ per cent secured gold bonds and to pledge as collateral security therefor $8,225,000 of Illinois Central refunding mortgage 4 per cent gold bonds and $3,820,000 of Illinois Central and Chicago, St. Louis & New Orleans joint first and refunding mortgage 5 per cent bonds. The new bonds are to be dated July 1, 1921, and the company has tentatively accepted an offer from Kuhn, Loeb & Co. to take them at 93¾. The proceeds are to be used to retire maturing obligations. The Illinois Central and the Chicago, St. Louis & New Orleans have also asked authority to issue $136,700 of their joint 5 per cent bonds to reimburse the treasury for advances for expenditures on the Chicago, St. Louis & New Orleans.

KANSAS CITY SOUTHERN.—*Annual Report.*—The income account for the year ended December 31, 1920, compares with the previous year as follows:

	1920	1919
Operating revenues	$18,668,288	
Operating expenses	15,051,665	$90,477
Net from railway operation	3,616,624	
Taxes	833,750	100,970
Income from lease of road	485,919	3,536,228
Federal guaranty of income	1,120,332	
Gross income	4,807,939	3,636,425
Interest on funded debt	1,883,277	1,835,392
Total deductions from gross income	2,883,885	2,102,330
Net income	1,924,054	1,342,679
Dividends	840,000	840,000
Income balance	1,084,054	502,679

The annual report of the Kansas City Southern will be reviewed editorially in an early issue.

KANSAS, OKLAHOMA & GULF.—*Authorized to Issue Bonds.*—The Interstate Commerce Commission has authorized an issue of $203,478 of 6 per cent cumulative income bonds for the purpose of satisfying claims against the Missouri, Oklahoma & Gulf railway and railroad companies which existed prior to the receivership.

LIBERTY WHITE.—*Asks Authority to Abandon Line.*—This company has applied to the Interstate Commerce Commission for a certificate authorizing the abandonment of 24.2 miles from Liberty to South McComb, Miss.

LOUISVILLE & NASHVILLE.—*Merger with A. C. L. Denied.*—See Atlantic Coast Line.

MINNEAPOLIS & ST. LOUIS.—*Authorized to Issue Equipment Notes.*—This company has been authorized by the Interstate Commerce Commission to issue $1,593,033 of rent notes under the terms of the contract with the National Railway Service Corporation, to assume obligation as guarantor in respect of obligations of the service corporation to the United States for a loan of $386,190, and to pledge with the Secretary of the Treasury securities to secure the repayment of the loan.

MISSOURI, KANSAS & TEXAS.—*Authorized to Extend Receivers' Certificates.*—The Interstate Commerce Commission has author-

ized the receiver to extend the maturing of $3,000,000 of receivers' certificates from February 15, 1921, to February 15, 1922.

NEW YORK CENTRAL.—A review of this company's annual report for 1920 appears on another page of this issue.

NORTHERN PACIFIC.—*Annual Report.*—A review of this company's annual report for 1920 appears on another page of this issue.

OREGON-WASHINGTON RAILROAD & NAVIGATION COMPANY.—*Authorized to Assume Additional Liability.*—This company has been authorized by the Interstate Commerce Commission to assume additional liability upon $14,755,500 of its outstanding first and refunding mortgage 4 per cent bonds by the modification of the tax covenant therein, and the Union Pacific has been authorized to guarantee the payment of principal and interest thereon. The bonds are to be delivered to W. A. Clark as part payment for his interest in the Los Angeles & Salt Lake.

PERE MARQUETTE.—*Asks Authority to Acquire Control.*—This company has applied to the Interstate Commerce Commission for approval and authority for its acquisition of control of the Flint Belt by purchase of its capital stock. The Flint Belt has just been organized to construct a belt line at Flint, Mich.

PHILADELPHIA & READING.—*Annual Report.*—The corporate income account for the year ended December 31, 1920, compares with the previous year as follows:

	1920	1919
Compensation accrued under federal control	$2,656,513	$16,009,826
U. S. Government guaranty	7,969,539	.....
Operating revenues (Sept. 1 to Dec. 31)	38,547,921	.....
Operating expenses (Sept. 1 to Dec. 31)	31,587,469	.....
Net revenue from operations	$6,960,452	.....
Taxes	981,454	.....
Gross income	15,514,922	16,351,892
Deductions:		
Rent for leased roads	3,488,833	3,480,759
Interest on funded debt	1,956,195	1,961,582
Total, including other	$5,874,863	$6,640,353
Less corporate charges not included above:		
U. S. income taxes Jan. 1 to Aug. 31, 1920, and for year ended Dec. 31, 1919	596,000	1,089,515
Corporate expenses, January and February, 1920, and for year ended Dec. 31, 1919	33,269	629,269
Net income	$9,010,790	$8,460,763
Appropriated for investment in physical property	2,538,571	4,500,100
Dividends	6,372,255	4,248,170
Income balance	6,430,825	3,960,663

The annual report of the Philadelphia & Reading will be reviewed editorially in an early issue.

ROCK ISLAND, ARKANSAS & LOUISIANA.—*Authorized to Issue Bonds.*—The Interstate Commerce Commission has authorized the issue of $227,000 of first mortgage 4½ per cent gold bonds to the Chicago, Rock Island & Pacific for money advanced for certain additions and betterments.

TENNESSEE & NORTH CAROLINA.—*Authorized to Issue Stock.*—This company has been authorized by the Interstate Commerce Commission to issue $250,000 of common stock in payment for the property formerly operated by the Tennessee & North Carolina Railroad, which has been reorganized as the Tennessee & North Carolina Railway.

TENNESSEE, ALABAMA & GEORGIA.—*To Be Sold.*—This road will be sold by Special Master Grayson on August 6, under orders issued by the Federal Court at Chattanooga, Tenn. The minimum bid has been fixed at $400,000. The road, operating 96 miles of lines, has been in the hands of receivers since December, 1920.

WESTERN PACIFIC.—*I. C. C. to Investigate Relations with D. & R. G.*—See article on another page of this issue entitled, "Will Investigate Relations of Western Pacific."

WICHITA NORTHWESTERN.—*Authorized to Issue Bonds.*—This company has been authorized by the Interstate Commerce Commission to issue $600,000 of first consolidated mortgage bonds and to pledge them with the Secretary of the Treasury as collateral security for a loan.

WILLIAMSPORT & NORTH BRANCH.—*Authorized to Issue Securities.*—This company has been authorized by the Interstate Commerce Commission to issue at par $200,000 of first mortgage 6 per cent gold bonds, $200,000 of non-cumulative 6 per cent preferred stock and $500,000 of common stock, in full payment for its railroad property, rights and franchises, acquired at a foreclosure sale.

WISCONSIN NORTH WESTERN.—*Authorized to Abandon Line.*—The Interstate Commerce Commission has issued a certificate authorizing this company to abandon its line from Girard Junction to Taylor Rapids, 18.3 miles, in the county of Marinette, Wis.

Guaranty Certificates Issued

The Interstate Commerce Commission has issued certificates for partial payments of the railroad guaranty for six months of 1920 as follows:

Georgia & Florida, $150,000.
Chicago & Alton, $200,000.

Total payments by the Treasury Department under the provisions of the Transportation act, and exclusive of payments made by the Railroad Administration to July 11 were as follows:

(a) Under Section 204, for reimbursement of deficits during federal control	$1,354,339.74
(b) Under Section 209:	
(1) To carriers to which final payment of the guaranty has been made under paragraph (g) including previous advances under paragraphs (h) and (i)	1,690,114.71
(2) For advances under paragraphs (h) and (i) to carriers as to which a certificate for final payment has not been received by the Treasury from the Interstate Commerce Commission	262,950,874.00
(c) Under Section 212:	
(1) For partial payments in respect to the guaranty provided in Section 209	159,372,690.05
(2) For partial payments in respect to the reimbursement for deficits during the period of federal control provided in Section 204	588,853.02
(d) Under Section 210, for loans from the revolving fund of $360,000,000 therein provided	218,211,667.00
Total	$644,168,538.52

Dividends Declared

Central of Georgia.—Common, 2½ per cent; preferred, 3 per cent; both payable June 30 to holders of record June 30.

Huntingdon & Broad Top Mountain.—Preferred, 1 per cent, payable August 1 to holders of record July 15.

Pere Marquette.—Prior preferred, 1¼ per cent, quarterly, payable August 1 to holders of record July 14.

Baltimore & Ohio.—Preferred, 2 per cent, semi-annually, payable September 1 to holders of record July 30.

Nashville, Chattanooga & St. Louis.—3½ per cent, semi-annually, payable August 1 to holders of record July 23.

THE SALT LAKE CITY PASSENGER ASSOCIATION held its first dinner session at Salt Lake City, Utah, on June 27, and a constitution and by-laws were adopted and a general plan outlined to furnish tourists in Salt Lake with suitable information.

Photo by International

British Troops in Silesia

Annual Report

Northern Pacific Railway Company— Twenty-Fourth Annual Report

To the Stockholders of the
NORTHERN PACIFIC RAILWAY COMPANY:

The following, being the twenty-fourth annual report, shows the result of the operation of your property for the fiscal year ending December 31, 1920, to both the company and the United States Railroad Administration, the railroad having been operated by the United States during January and February.

CORPORATE AND FEDERAL INCOME ACCOUNT.

OPERATING INCOME	1919	1920	Increase—I Decrease—D	
Railway operating revenues	$100,739,353.93	$113,084,407.78	I	$12,345,053.85
Railway operating expenses	78,672,509.37	100,983,874.19	I	22,311,364.82
Net operating revenue.	$22,066,844.56	$12,100,533.59	D	$9,966,310.97
Railway tax accruals	9,000,737.47	10,108,686.38	I	1,107,948.91
Uncollectible railway revenues	23,940.16	18,468.90	D	5,471.26
Total operating income.	$13,042,166.93	$1,973,378.31	D	$11,068,788.62
NONOPERATING INCOME				
Hire of freight cars—credit balance	.....	$4,310,307.64	I	$4,310,307.64
Rent from locomotives	$196,400.89	180,864.41	D	15,536.48
Rent from passenger train cars	37,235.06	256,910.78	I	219,675.72
Rent from work equipment	167,369.59	134,128.93	D	33,240.66
Joint facility rent income	2,118,959.79	2,211,143.93	I	92,184.14
Income from lease of road	288,419.36	289,703.28	I	1,283.92
Miscellaneous rent income	612,274.88	674,576.12	I	62,301.24
Miscellaneous nonoperating physical property	49,466.11	49,250.60	D	215.51
Separately operated properties—profit	.....	31,067.31	I	31,067.31
Dividend income	4,456,161.00	4,353,552.00	D	102,609.00
Income from funded securities	539,550.20	926,686.48	I	387,136.28
Income from unfunded securities and accounts	1,810,862.60	937,803.20	D	873,059.40
Income from sinking and other reserve funds	583,170.55	.....	D	583,170.55
Miscellaneous income	6,269.92	2,574.27	D	3,695.65
Total nonoperating income	$10,866,139.95	$14,358,568.95	I	$3,492,429.00
Compensation under contract with United States Government	$30,089,691.88	$5,301,309.04	D	$24,788,382.84
Guaranty under Transportation Act	.....	14,760,606.14	I	14,760,606.14
Deduct, Federal income included above	*18,353,596.64	*4,002,969.68	I	14,350,626.96
Gross corporate income.	$35,644,402.12	$32,390,892.76	D	$3,253,509.36
DEDUCTIONS FROM GROSS INCOME				
Hire of freight cars—debit balance	$313,897.55	.....	D	$313,897.55
Rent for locomotives	51,072.57	$72,825.04	I	21,752.47
Rent for passenger train cars	26,485.45	103,250.23	I	76,764.78
Rent for work equipment.	20,766.43	9,974.80	D	10,791.63
Joint facility rents	781,431.39	931,225.71	I	149,794.32
Rent for leased roads	51,331.86	51,322.02	D	9.84
Miscellaneous rents	10,157.84	9,643.07	D	514.77
Interest on funded debt	12,117,483.28	12,134,437.60	I	16,954.32
Interest on unfunded debt	248,526.77	14,060.08	D	234,466.69
Miscellaneous income charges	259,356.23	231,895.32	D	27,460.91
Total deductions from gross income	$13,880,509.37	$13,558,633.87	D	$321,875.50
Less Federal deductions	*1,072,843.99	*261,924.42	I	$810,919.57
Net deductions	$12,807,665.38	$13,296,709.45	I	$489,044.07
Net corporate income.	$22,836,736.74	$19,094,183.31	D	$3,742,553.43
DISPOSITION OF NET INCOME				
Dividend appropriations of income	$17,360,000.00	$17,360,000.00		
Income balance for year —transferred to profit and loss	$5,476,736.74	$1,734,183.31	D	$3,742,553.43

*In arriving at "Total operating income" and "Total nonoperating income," Federal items for 1919 amounting to $18,353,596.64 and for 1920 to $4,002,969.68 have been added to corporate items. In arriving at "Total deductions from gross income," Federal items for 1919 amounting to $1,072,843.99, and for 1920 to $261,924.42, have been added to corporate items. In order to arrive at the correct "Income balance" for each year it is necessary to deduct the amounts shown above.

MILEAGE OPERATED

Changes have taken place in the mileage operated as follows:

	Miles
There were added:	
March 1, 1920, Fort Sherman Branch, Idaho, operation reinstated	13.61
Dec. 31, 1920, Great Northern Ry., Helena to Hyndman, Montana, operation reinstated	2.66
Dec. 31, 1920, Lake Superior Terminal and Transfer Ry. tracks in Superior transferred from side tracks	1.13
Sundry minor changes and corrections	.41
Total additions	17.81
Deductions:	
Dec. 31, 1920, Cuyuna Northern Branch, South, Minnesota, operation discontinued	3.56
Dec. 31, 1920, O.-W. R. and N. Co. joint tracks, Gray's Harbor District, Washington, transferred to second track.	1.22
	4.78
Net addition	13.03

Mileage operated December 31, 1919	6,642.26
Mileage operated December 31, 1920	6,655.29
Average mileage operated during the year	6,653.36

REVENUE TRAIN MILEAGE.

Revenue passenger train miles during the year were 9,977,960, an increase of 306,599 miles compared with the previous year.

Revenue freight and mixed train miles during the year were 11,904,455, an increase of 420,650 miles.

Revenue special train miles during the year were 12,820, a decrease of 5,662 miles.

All revenue train miles during the year were 21,895,235, an increase of 721,587 train miles.

EARNINGS.

FREIGHT BUSINESS.

Freight revenue was $81,090,389.63, an increase of $8,155,667.04 or 11.18 per cent compared with the previous year. Freight revenue for 1917 was $65,258,994.76.

7,852,847,753 tons of revenue freight were moved one mile, an increase of 263,811,333 tons one mile, or 3.48 per cent compared with the previous year.

The average earnings per ton mile increased from .00961 to .01033.

The revenue train load decreased from 660.85 to 659.66 tons. The total train load, including company freight, increased from 752.33 tons to 761.21.

The number of miles run by revenue freight trains was 11,209,167, an increase of 401,421, or 3.71 per cent.

PASSENGER BUSINESS.

Passenger revenue was $21,143,707.94, an increase of $812,390.48, or 4.00 per cent compared with the previous year.

Mail revenue was $2,891,069.40, an increase of $1,938,107.25 or 203.38 per cent; making allowance for back mail pay received in 1920, there was an increase of $178,081.03 or 11.87 per cent.

Express revenue was $2,326,076.90, an increase of $304,817.35, or 15.08 per cent.

Sleeping car, parlor and chair car, excess baggage and miscellaneous passenger revenue was $801,527.22, an increase of $658,486.50, or 460.35 per cent. This increase was caused by The Pullman Company not paying any portion of earnings to railroads in 1919.

Total revenue from persons and property carried on passenger trains was $27,162,381.46, an increase of $3,713,801.58, or 15.84 per cent compared with the previous year. Total revenue from passenger trains in 1917 was $18,874,197.67.

The number of passengers carried was 8,447,966, a decrease of 185,620 over the previous year, and the number of passengers carried one mile was 719,445,961, a decrease of 29,189,636, or 3.90 per cent.

The number of miles run by revenue passenger trains was 9,977,960, an increase of 306,599, or 3.17 per cent.

The average rate per passenger mile was 2.939 cents against 2.716 cents last year.

EARNINGS AND EXPENSES PER MILE OPERATED.

	1917	1918	1919	1920
Operating revenues per mile.	$13,526.37	$15,594.28	$15,282.27	$16,996.59
*Operating expenses per mile.	8,171.39	10,857.13	11,934.71	15,177.88
Net operating revenue per mile	5,354.98	4,737.15	3,347.56	1,818.71
*Taxes per mile	1,059.52	1,236.01	1,365.42	1,519.34
Net	$4,295.46	$3,501.14	$1,982.14	$299.37

RATIOS.

	1917	1918	1919	1920
Operating expenses to operating revenue	60.41%	69.62%	78.10%	89.30%
Taxes to operating revenue	7.83%	7.93%	8.93%	8.94%

*The corporate expenditures for expenses and taxes are included in order to make proper comparison between the four years, 1917, 1918, 1919 and 1920, and for the same reason are also included in the ratios.

OPERATING EXPENSES.

CONDUCTING TRANSPORTATION.

The charges for transportation expenses were $48,439,001.28, an increase of $10,164,538.53 or 26.56 per cent, as against an increase in total operating revenue of 12.25 per cent. The charges for 1917 were $28,531,412.99.

MAINTENANCE OF EQUIPMENT.

The charges for maintenance of equipment were $25,593,923.34, an increase of $5,784,804.48 or 29.20 per cent. The charges for 1917 were $11,245,120.34.

LOCOMOTIVES.

Total number of locomotives on active list December 31, 1919, the date of the last annual report		1,406
Additions:		
Locomotives purchased	61	
Locomotives remodeled	4	
	—	65
		1,471
Deductions:		
Locomotives sold during the year, from active list	1	
Locomotives dismantled and withdrawn from service	24	
	—	25
Total locomotives on active list December 31, 1920		1,446
In addition to the locomotives on active list there were:		
Withdrawn from service and on hand December 31, 1919	39	
Withdrawn from service during the year	23	
	—	62
Less—Dismantled during year	22	
Rebuilt and reinstated on active list	4	
	—	26
Leaving on hand locomotives withdrawn from service which may be sold		36

Of the 71 locomotives, the purchase of which was authorized during the year, 6 Mallet and 4 Switching, have not been delivered.

PASSENGER EQUIPMENT.

On December 31, 1920, the Company owned 1,041 passenger train cars, a decrease of 23 cars, destroyed or transferred to other classes during the year.

Of the 1,041 cars owned, 710 were not due in shops for two months or more.

No additional passenger equipment is under contract for construction or is building at company shops.

Freight Equipment.

Of the total number of freight train cars on the road on December 31, 1920, 3,322, or 7.04%, were in need of repairs requiring one hour's labor or more per car; and 2,419, or 5.13%, required heavy repairs or in excess of twenty hours' labor on each car.

Miscellaneous Equipment

The purchase of 90 caboose cars has been authorized, none of which have been delivered.

MAINTENANCE OF WAY AND STRUCTURES.

The charges for maintenance of way and structures were $21,012,798.18, an increase of $4.789,142.79, or 29.52 per cent. The charges for 1917 were $10,782,178.23.

GENERAL.

Financial Results of Operation.

During the first two months of 1920 your property remained under Federal control. The compensation under contract with the United States Government for this period was $5,301,309.04, out of which your company was obliged to assume operating expenses and war taxes amounting to $696,097.69, leaving net compensation of $4,605,211.35. The net railway operating income accruing to the Government from the use of your property was $3,741,045.26.

As a result of the Government guaranty to your company for the succeeding six months there was included in the income account $14,760,606.14. In actual operation there was a deficit for this six months' period of $1,238,010.96.

For the last four months of the year the net railway operating income was $6,142,521.61.

It is thus apparent that while the amount actually accruing to your company for the year from the use and operation of its property was $24,270,328.14, its actual net railway operating income was only $7,949,458.22.

The operating revenues, $113,084,407.78, were the largest in the company's history and the decrease in total operating income was due entirely to the great increase in operating expenses (due largely to higher wages and prices of fuel and materials), and to increase in taxes.

Claims For Balances Due From Government.

Your management has reached an agreement with the Director General of Railroads as to the balance due to your company in connection with the use of its property during the period of Federal control ending February 29, 1920. Under this agreement your company will receive at once $9,000,000.00.

The check of the quantities of material and supplies turned over to the Director General at the commencement of Federal control, and of the quantities returned to your company at the end of Federal control, has not been completed. Your company will receive, in addition to the amount above stated, the balance found due it for the value of material and supplies delivered to the Director General for which he has not made settlement.

Your company has also presented to the Interstate Commerce Commission, under the provisions of the Transportation Act, its claim for an amount which, when added to its net railway operating income for the six months' period ending August 31, 1920, will equal the amount guaranteed by the Government for that period. On this claim payments amounting to $12,000,000.00 have been made pending final consideration and settlement.

Valuation Work.

The Bureau of Valuation of the Interstate Commerce Commission has continued the work of valuing your property. The field work in connection with the compilation of the inventory of all of the property owned has been completed and it is understood that under the present program of the Commission preliminary Engineering and Land Reports will be served on the company some time late in 1921.

The number of company employees engaged in this work at the present time is 118 and the total expenditure for the company's portion of the work up to December 31, 1920, was $1,399,745.64.

Stockholders and Employees.

On December 31, 1920, there were approximately 36,000 holders of the stock of your company, an increase during the year of 5,235. This makes an average holding of about 69 shares for each stockholder, compared with an average holding on December 31, 1919, of 80½ shares. Average number of employees in 1920 was 35,244 and on March 31, 1921, there were about 27,000.

Land Department.

The operations of the Land Department for the year 1920 are shown on pages 36 and 37. New sales were less by 2,968.90 acres than the acreage included in cancelled contracts. Payments of principal and interest by contract holders were much less than in the previous year. These results reflect the difficult situation which the farming and stock growing industries in territory occupied by your lines have had to confront. The Company's policy has been to treat contract holders leniently, and contracts have been cancelled only when no adjustments could be made.

Oil Development.

The year 1920 has shown marked progress in oil exploration in Montana. During the year work was under way on ninety-seven wells in twenty-eight areas throughout the state. Omitting the Elk Basin oil district, which is largely in Wyoming, oil in commercial quantities has been produced in only one distinctively Montana field, the Cat Creek District in eastern Fergus County. On December 31, ten wells were producing oil and fourteen wells were being drilled in this field, several of which have since been brought in. The first oil was shipped out of the district in August and up to the end of the year 948 carloads had been shipped, all consigned to Wyoming points. The territory so far proved is quite limited, none of it being within the grant of lands to the Northern Pacific. A small commercial well was brought in on Northern Pacific land in the Devil's Basin District in Musselshell County, north of Roundup, but so far no oil has been shipped. Drilling is being carried on actively at numerous points in Central and Eastern Montana.

Although the oil thus far produced from Northern Pacific lands has been inconsiderable, there are within those lands a number of so-called "structures" of which the geology suggests that oil may be found under them. Your management has considered it unwise to give drilling rights in these lands until further investigations could be made as to their oil-bearing possibilities. With that end in view the Absaroka Oil Development Company was formed with an authorized capital of $1,000,000.00. Control of this company will be retained by your subsidiary, the Northwestern Improvement Company. The organization of the company has been completed and the work of examining the lands will be pushed forward energetically.

Subsidiary Companies.

The Spokane, Portland and Seattle Railway Company, owned jointly by your company and the Great Northern, has settled with the Government for the balance due for the use of its property. No settlement has as yet been reached by the Oregon Trunk, the Oregon Electric, or the Minnesota and International Companies.

Changes in Balance Sheet Accounts.

The analysis of the accounts reflecting sales of lands granted in aid of construction by the United States and the State of Minnesota, to which reference was made in the last annual report, has been completed and the results are embodied in the general balance sheet statement below.

The entries covering the adjustments of these land grant transactions have been reviewed by the Interstate Commerce Commission and found correct in principle.

Further analysis of the "Investment in road and equipment" account developed that the cost of stocks and bonds of The Manitoba Railway Company to the amount of $8,199,044.69 had been included in that account, and that a part of the cost of the property of The Washington Central Railway Company to the amount of $1,389,234.33 had not been included in that account. In accordance with the requirements of the Interstate Commerce Commission proper adjustments have been made.

As as result of these entries "Investment in road and equipment" account has been increased $17,505,454.36, "Corporate surplus" has been increased $15,484,873.04, "Funded debt" has been increased $827,000.00 and other accounts have been changed $1,193,581.32.

Refunding of Northern Pacific-Great Northern, C. B. and Q. Collateral, Joint 4% Bonds.

The joint bonds issued in 1901, when your company together with the Great Northern Railway Company, acquired approximately 97% of the stock of the Chicago, Burlington & Quincy Railroad Company, will mature July 1, 1921. The amount outstanding is $215,227,000.00. For the payment of these bonds your company and the Great Northern Railway Company are jointly and severally liable.

It was necessary for the two obligor companies to make some provision for refunding this indebtedness, and application was made to the Interstate Commerce Commission for authority to issue the Joint Collateral Bonds of the two companies to the amount of $230,000,000, payable in 15 years, bearing interest at 6½% per annum. This authority was granted and the new issue has been sold to the public at 96½.

The new joint 6½% bonds are convertible to the extent of $115,000,000.00 into 6% Gold Bonds of your company, issued under its Refunding and Improvement Mortgage, and to an equal amount into the 7% General Mortgage Bonds of the Great Northern Railway Company.

The funds derived from the sale of the new issue of joint bonds will be used for the payment at maturity of the joint 4% bonds now outstanding.

Increase in Freight Rates and Passenger Fares.

In July, 1920, the Interstate Commerce Commission authorized increases in freight rates and passenger fares throughout the United States. The increased rates and fares became effective August 26, 1920, on traffic moving in interstate commerce. Similar increases have since been authorized in all states served by your lines except the State of North Dakota. Proceedings begun to secure such increases in that state are now pending before the Interstate Commerce Commission, and it is believed that they will shortly be brought to a conclusion.

Comparative Statement of Payrolls.

On July 20, 1920, the United States Labor Board rendered its Wage Decision No. 2, effective as of May 1, 1920, under which wages for all employees covered by working agreements and properly before the Board, were granted substantial increases in rates of pay. It was necessary to grant similar increases to employees not before the Board. These increases amounted in all to nearly $11,200,000.00 per annum.

Comparison of your company's payroll for a period of years shows the cumulative effect of the wage increases since the beginning of the war:

Total payroll for year ending June 30, 1915.....	$24,486,852.00
Total payroll for year ending December 31, 1916.....	28,204,669.00
Total payroll for year ending December 31, 1917.....	35,877,879.00
Total payroll for year ending December 31, 1918.....	49,632,127.00
Total payroll for year ending December 31, 1919.....	52,605,396.00
Total payroll for year ending December 31, 1920.....	66,503,794.00

Materials and Supplies.

There has been a marked advance, within the past five years, in the prices of all materials used in the operation and maintenance of railroads. The following statement shows the extent of this advance in the single item of coal for locomotives:

Year Ended Dec. 31	*Coal used by Locomotives Tons*	*Average Cost per Ton*	*Total Cost*
1916	2,520,215	$2.566	$6,466,872.00
1917	2,745,034	3.030	8,317,453.00
1918	2,718,558	3.8884	10,570,841.00
1919	2,460,428	4.1008	10,089,723.00
1920	2,625,493	4.6740	12,271,554.00

Because of difficulties in the eastern coal fields the companies operating coal docks at the head of Lake Superior were unable in 1919 to bring up an adequate supply of railroad fuel from those fields, and it became necessary in 1920 to purchase and use a considerable amount of Illinois coal. Eastern coal brought the highest prices ever paid, ranging from eight to nine dollars per ton delivered on docks at the Head of the Lakes.

Taxes.

Taxes are constantly increasing and become more burdensome from year to year. The following statement shows the amounts charged to Railway tax accruals in each of the four years ending with 1920. It will be noted that the total amount charged in 1920 was more than 46% greater than the amount charged in 1917.

	1917	1918	1919	1920
State taxes	$5,169,742.57	$5,865,666.69	$6,913,707.44	$8,453,990.33
Federal taxes ..	1,727,242.85	2,264,762.40*	2,055,483.31†	1,620,591.91‡
Canadian and miscellaneous taxes.	13,742.77	26,654.17	31,546.72	34,104.14
Totals	$6,910,728.19	$8,157,083.26	$9,000,737.47	$10,108,686.38

*$89,657.00 refunded by Government and credited to Profit and Loss.

†$89,657.00 refunded by Government and $181,434.00 abated and credited to Profit and Loss.

‡$181,434.00 abated by Government and not charged to Income.

St. Paul-Duluth Division Mortgage Bonds.

Since the last report your management, exercising the discretion reposed in it by Article III of the Agreement of November 15, 1900, between your company, and the Guaranty Trust Company, had acquired up to December 31, 1920, $5,261,000 par value of the outstanding bonds secured by mortgage

on the St. Paul-Duluth Division of your railroad. These bonds were acquired by the use of funds derived from the sale of the St. Paul and Duluth lands. These funds had been invested in Liberty Bonds and a direct exchange was made, par for par, of Liberty Bonds for the St. Paul-Duluth Division Bonds of your company. There are still outstanding $2,819,000 of these St. Paul-Duluth Division Bonds, and the company now has on hand funds derived from the sale of St. Paul and Duluth lands, available for their retirement.

Express Contract.

Effective September 1, 1920, a contract was entered into between your company and the American Railway Express Company, giving to the latter the exclusive right to move express business over your railroad. The contract is terminable at the end of two and one-half years; if not then terminated it runs until September 1, 1925. It provides that your company shall receive all of the net earnings from express transportation over its railroad less a commission of 2½% to be paid to the Express Company.

Equipment Trust.

It was considered necessary to acquire some additional heavy locomotives and other equipment during the past year, largely to replace units already retired or approaching retirement. To finance this purchase an Equipment Trust was created and $4,500,000 of Equipment Trust certificates, bearing interest at the rate of 7% per annum were sold. The following equipment was acquired under this trust:

60 Air dump cars.	20 Pacific type locomotives.
300 Hart convertible cars.	20 Switching locomotives.
25 Mikado type locomotives.	6 Mallet locomotives.

Loan From Government.

For the purpose of providing additional equipment and additions and betterments to existing equipment and to way and structures, your company filed application with the Interstate Commerce Commission under the provisions of Section 210 of the Transportation Act, 1920, for a loan of $6,000,000. The application was approved and on November 23, 1920, your company issued note for $6,000,000 payable in five years with interest at 6% and secured by $6,000,000 United States Liberty bonds as collateral.

Changes in Official Organization.

On the termination of Federal control Mr. J. M. Hannaford was re-elected President of your company. He held that office until December 1, 1920, when he resigned because of his desire to be relieved from its active duties and responsibilities. Mr. Charles Donnelly was elected to succeed him.

Since the last report, two of the company's most faithful and efficient officers have died. Mr. Thomas Cooper, who held the office of Vice President and Land Commissioner at the time of his retirement on October 1, 1919, died at his home in Long Beach, California, on October 20, 1920. Mr. C. A. Clark, Treasurer of the company, and who had been in its service continuously since 1882, died at his home in St. Paul on August 1, 1920. Mr. H. A. Clifford, for many years the company's Cashier, was elected as his successor.

By Order of the Board of Directors.

Howard Elliott, *Chairman.*
Charles Donnelly, *President.*

NORTHERN PACIFIC RAILWAY COMPANY.

General Balance Sheet, December 31, 1920.

Assets.

Investments.			
Road and Equipment December 31, 1919.			
Road	$417,651,309.81		
Equipment	82,170,700.50		
		$499,822,010.31	
Charges since December 31, 1919		8,591,166.56	
Adjustments during the year		17,505,454.36	
			$525,918,631.23
Sinkings Funds			3,019.94
Deposits in Lieu of Mortgaged Property (Net moneys in hands of Trustees from sale of land grant land, etc.)			594,150.83
Miscellaneous Physical Property			7,485,182.20
Investments in Affiliated Companies.			
Stocks		*$144,045,403.60	
Bonds		37,065,697.75	
Notes		2,556,599.35	
Advances		2,976,081.13	
			186,643,781.83
Other Investments.			
Bonds		$9,773,668.30	
U. S. Treasury certificates of indebtedness		3,305,000.00	
Contracts for sale of land grand lands		13,571,498.75	
			26,650,167.05
Total Capital Assets			$747,294,933.08
Current Assets.			
Cash		$9,778,593.45	
Special deposits		6,155,299.69	
Loans and bills receivable		57,079.03	
Traffic and car service balances receivable.		2,333,853.25	
Net balances receivable from agents and conductors		1,022,744.94	
Miscellaneous accounts receivable		7,513,362.38	
Material and supplies		14,372,325.02	
Interest, dividends and rents receivable		479,071.97	
Due from U. S. Government under Federal control contract		19,046,122.87	
Other current assets		133,854.56	
			60,892,307.16
Deferred Assets.			
Working fund advances		$66,350.09	
Other deferred assets		18,004.27	
			84,354.36
Due from U. S. Government account various transactions		$12,379,707.71	
U. S. Government—value of material and supplies turned over		9,998,851.11	
			22,378,558.82
Unadjusted Debits.			
Rents and insurance premiums paid in advance		$41,238.99	
Balance of Guaranty due from Government		9,760,606.14	
Other unadjusted debits		3,177,372.63	
			12,979,217.76
			$843,629,371.18

Liabilities.

Stock.			
Capital stock—common			$248,000,000.00
Governmental Grants.			
Grants in aid of construction			3,406.60
Long Term Debt.			
Funded debt		*$324,214,500.00	
Less—held in treasury		9,149,500.00	
			315,065,000.00
Total Capital Liabilities			$563,068,406.60
Current Liabilities.			
Traffic and car service balances payable		$1,254,255.54	
Audited vouchers and wages payable		11,512,467.55	
Miscellaneous accounts payable		841,200.38	
Interest matured unpaid		1,830,860.44	
Unmatured dividends declared		4,340,000.00	
Unmatured interest accrued		528,073.61	
Unmatured rents accrued		6,147.20	
Other current liabilities		395,542.92	
			20,708,547.64
Deferred Liabilities.			
Other deferred liabilities			136,524.87
Due U. S. Government account various transactions		$11,109,411.05	
Due U. S. Government account expenditures for additions and betterments		17,412,603.48	
Due U. S. Government account value of material and supplies turned back		10,650,577.61	
			39,172,592.14
Unadjusted Credits.			
Tax liability		$6,527,116.63	
Operating reserves		1,771,257.68	
Accrued depreciation of equipment		35,473,839.97	
Other unadjusted credits		2,967,385.33	
			46,739,599.61
Corporate Surplus.			
Additions to property through income and surplus	$128,184.59		
Funded debt retired through income and surplus	15,214,356.79		
Miscellaneous fund reserves.	206,362.77		
		$15,548,904.15	
Profit and loss balance		158,254,796.17	
			173,803,700.32
			$843,629,371.18

*Includes $107,613,500 joint bonds made and issued by this Company and the Great Northern Railway Company to pay for stock of the Chicago, Burlington and Quincy Railroad Company.

*Includes this Company's one-half of $107,613,500 stock of the Chicago, Burlington & Quincy Railroad Company to secure $215,227,000 joint bonds made and issued by this Company and the Great Northern Railway Company to pay for said stock, costing $109,114,809.76.

PROFIT AND LOSS ACCOUNT.

December 31, 1920

To		By	
Loss on road and equipment retired	$560,284.29	Balance December 31, 1919	$121,178,242.69
Adjustment of operating expenses prior to January 1, 1918	233,579.25	Balance of income for year ended December 31, 1920	1,734,183.31
Discount on Liberty bonds sold	432,123.20	Adjustment of Land Department transactions to December 31, 1919	31,341,592.60
Adjustment of cost of property acquired in 1898	436,000.00	Minnesota Rate Case appropriation balance written off	330,107.07
Discount and expense in connection with issuance of equipment trust notes	164,625.42	Discount on mortgage bonds purchased and cancelled.	539,009.10
Net deficit of Land Department—year 1920	129,109.58	Unrefundable overcharges	5,699.80
Cost of abandoned surveys charged off	11,234.52	Donations for installing spur tracks and sidings	112,475.79
Balance of sundry accounts	544.34	Unclaimed wages 3 years old	36,864.54
Surplus appropriated for investment in physical property	128,184.59	Profit on road and equipment sold	694.58
Surplus applied to sinking and other reserve funds	15,420,719.56	Insurance and casualty reserves	5,803,205.98
Balance December 31, 1920	158,254,796.17	Receipts from St. Paul and Duluth Railroad land	6,901,196.69
		Unadjusted interest on construction expenditures	7,787,928.77
	$175,771,200.92		$175,771,200.92

[Advertisement]

New York Central Railroad Company—Annual Report

To the Stockholders of

THE NEW YORK CENTRAL RAILROAD COMPANY:

The Board of Directors herewith submits its report for the year ended December 31, 1920, with statements showing the income account for the year and the financial condition of the company.

The operation and maintenance of the company's road were continued under federal control until 12.01 o'clock a. m. of the first day of March, 1920, at which time the company resumed the operation of its railroad property. The Board of Directors at its meeting of March 10, 1920, authorized the acceptance on behalf of the company of the guaranty provisions of Section 209 of the Transportation Act, approved February 28, 1920, and such acceptance was filed with the Interstate Commerce Commission before March 15, 1920, as provided by the Act. The effect of this was that for the six months to September 1, 1920, the company was guaranteed a railway operating income not less than one-half the amount named in its contract with the Government as annual compensation.

The Interstate Commerce Commission by its order of July 29, 1920, granted an increase, effective August 26, 1920, in freight rates in eastern group territory of 40 per cent and of 33⅓ per cent between points in eastern group territory and other territories. It also granted an increase in passenger rates of 20 per cent, with a surcharge on Pullman fares of 50 per cent accruing to the carriers. These increases were not immediately allowed by several of the States as to intrastate rates, so that the full effect of the advance was not measured by the percentages for interstate traffic, although, in most instances, they were subsequently allowed under further orders of the Commission.

For the full year 1920 the freight and passenger revenues showed marked advances over the previous year. The return, however, was not as great as it would have been under normal business conditions, due to the fact that the greater part of the tonnage increase was carried at relatively low rates. The principal source of additional tonnage was in shipments of coal and ores and other products of mines, these constituting an increase of 12,949,000 tons out of a total increase of 14,704,000 tons. There was a falling off in the shipments of grain, certain products of agriculture, live stock, fresh meats and packing house products, other products of animals and forest products, aggregating approximately 2,163,000 tons, while there were increases in manufactures and miscellaneous commodities of 3,918,000 tons.

The number of passengers carried during the year increased 7,238,014, this increase being entirely in local and commutation passengers carried. There were 416,416 fewer interline passengers carried than in 1919. This is reflected in the decrease of 4.29 miles in the average distance each passenger was carried. The advance in passenger rates, however, under order of the Interstate Commerce Commission, increased the average receipts per passenger per mile from 2.561 cents to 2.734 cents.

In the matter of payments for transportation of mail, which had been before the Interstate Commerce Commission for some time, an order was entered by the Commission in January, 1920, establishing increased rates from November 1, 1916, which, under the same order, were increased 25 per cent on January 1, 1918. Under this order the company received as additional compensation for the period November 1, 1916, to December 31, 1917, approximately $1,700,000, while the Railroad Administration received, as its share for the period of federal control, $4,600,000. The 1920 figures include $4,400,000 applying to the years 1918 and 1919, representing the greater part of the $4,600,000 above mentioned.

The substantial increases in pay and the changes in working conditions during and since federal control have created a situation which is giving the company grave concern. Besides the actual increases in wages granted by the Director General or ordered by the Labor Board, there have been reclassifications of employees and special allowances which entail additional expense without compensating return in labor performed.

Under rule 60 of the Shop Crafts Agreement which provides that employees who are required to check in and out on their own time will be paid one hour extra at the close of each week, and under rule 3 in the same agreement which provides 20 minutes without loss of pay for lunch, it is estimated that this company incurs an additional annual expense of $1,000,000.

The abolition of piece work in the shops of the company has cost millions of dollars. Under the piece work system and other shop conditions existing in 1915, 2,799 men turned out 73,072,000 effective miles of equipment. In 1920, piece work having been abolished and classification and working conditions of employees having been changed and employees being restricted to one kind of work for each class of employment, practically the same effective miles of equipment were turned out, namely 74,655,000, but 4,521 men were required. The cost of the work in 1915 was $2,903,700 and $8,352,000 in 1920, an increase of $5,448,300. That is to say, there was an increase in men of 61.5 per cent, an increase in money of 187 per cent and an increase in effective mileage output of but 2 per cent.

The increase in payrolls since 1917 for the New York Central excluding those of the Boston & Albany Railroad is indicated by the following:

Date	Number	Monthly payroll	Average monthly pay per employee
December 31, 1917	94,386	$8,409,722.25	$89.10
February 29, 1920	103,572	13,511,078.21	130.45
December 31, 1920	96,418	15,892,120.76	164.83

The total amount of payroll charged to operating expense in 1917 was $83,053,280.34, while for 1920 it was $177,289,639.71. The entire operating expenses for 1917 were $153,597,905.35, or $23,691,734.36 less than the 1920 payroll included in operating exupenses.

The condition of the company's equipment at the end of federal control has caused an unusual outlay for repairs, which are still under way. It will constitute the basis of a claim against the Director General of Railroads under the company's contract with him which stipulates that its property should be returned at the end of federal control in substantially as good repair and in substantially as complete equipment as on January 1, 1918.

There was a substantial increase in the cost of fuel.

Final settlement of accounts with the Railroad Administration for the period of federal control has not been effected, but the company is actively engaged in the preparation of the data necessary for use in connection with the making of such a settlement.

The settlement with the United States Government for the guaranty period —six months, March to August, 1920—in connection with the guaranty provision of the Transportation Act, is progressing.

The following is a comparative table of the mileage operated:

	1920 Miles	1919 Miles	Increase Miles	Decrease Miles
Main line and branches owned	3,699.19	3,699.18	.01	..
Leased lines	1,918.86	1,919.03	..	.17
Lines operated under trackage rights.	460.13	451.20	8.93	..
Total road operated	6,078.18	6,069.41	8.77	..

Mileage of line wned has been increased 1/100th of a mile as follows: Tonawanda Branch increased 2/100ths, due to correction of error; Clayton Branch decreased 1/100th of a mile, due to change of connection.

Mileage of line owned has been increased 1/100th of a mile as follows: changes: Decatur Branch of the Beech Creek Railroad decreased 3/100ths by abandonment; Mahoning Coal Railroad decreased 10/100ths due to relocation of connection with the Erie Railroad at Sharon; Detroit, Toledo & Milwaukee Railroad decreased 4/100ths, at Dundee, due to remeasurement in connection with valuation.

Mileage operated under trackage rights has been increased 8.93 miles as follows: on account of commencing operation over the Lake Erie & Eastern Railroad, the trackage rights over the Baltimore & Ohio Railroad from Niles Junction to Haselton, 14.06 miles, have been abandoned and rights acquired over the Pennsylvania Railroad from Niles Junction to Girard, 8.12 miles, and over the Lake Erie & Eastern Railroad from Girard to Struthers, 8.31 miles. Rights have also been acquired over the Wheeling & Lake Erie Railroad at Cleveland, 6.56 miles, under agreement of July 1, 1916, between the Wheeling & Lake Erie Railroad Company, the Cleveland, Cincinnati, Chicago & St. Louis Railway Company, and the New York Central Railroad Company. All of this new mileage is operated in freight service only.

The total number of stockholders at the end of the year was 32,396, of whom 32,173 were in the United States and 223 Abroad. The par value held by those in the United States was $248,170,795, and by those abroad, $1,421,500, the average holdings being 77 shares and 64 shares, respectively. The following table shows the growth in the number of stockholders from 1915 to 1920, both inclusive:

Date	Total Number	Total Average holding	In U.S. Number	In U.S. Average holding	Abroad Number	Abroad Average holding
Dec. 31, 1915	25,042	100	22,270	104	2,772	64
Dec. 31, 1916	22,532	111	21,836	112	696	56
Dec. 31, 1917	27,102	92	26,771	92½	331	69
Dec. 31, 1918	28,693	87	28,395	87	298	69
Dec. 31, 1919	30,445	82	30,180	82	265	67
Dec. 31, 1920	32,396	77	32,173	77	223	64

On September 15, 1920, the company issued and sold $25,000,000 of its ten-year 7 per cent collateral trust bonds, dated September 1, 1920, secured by the pledge of a like amount of its 6 per cent refunding and improvement mortgage bonds, issued for the purpose of such pledge, and of 75,000 shares of first preferred, and 110,000 shares of second preferred, stock of the Reading Company. The proceeds of this sale, amounting to $24,131,475, were used, to the extent of $15,000,000, to pay the company's one-year 6 per cent collateral trust notes for that amount which matured September 15, 1920; to the extent of $7,572,194.39 to reimburse the company for like amounts expended—(1) $505,000 to pay bonds of the Norwood & Montreal Railroad Company ($130,000) and bonds of the Rome,Watertown & Ogdensburg Terminal Railroad Company ($375,000), which matured in 1916, and (2) $7,067,194.39 to pay for additions and betterments made prior to July 1, 1920—and the balance has been or will be used for additions and betterments subsequent to July 1, 1920.

Provision was made for financing the cost of 4,500 freight cars and 128 locomotives allotted to the company, during federal control, by the Director General of Railroads, all of which have been delivered, through an equipment trust (known as Equipment Trust No. 43) established by an equipment trust agreement dated January 15, 1920, providing for the payment of 75 per cent of the cost of the equipment in the company's 6 per cent equipment notes, dated January 15, 1920, maturing in equal annual installments over a period of 15 years, the balance, pursuant to an agreement, dated January 14, 1920, between the Director General and the company, to be deducted from the equipment depreciation and retirement credits arising in the company's favor under the standard contract with the Director General. The total cost of the equipment will amount to something less than $18,500,000; $13,674,000 of the notes have been issued.

In addition to the equipment allocated to the company by and acquired from the Director General, the company ordered from manufacturers 196 locomotives, 265 passenger cars and 9,244 freight cars of an estimated cost of $48,318,300. About one-third of this equipment was delivered during the year 1920. Approximately 75 per cent of the cost of this equipment has been financed by the issue and sale (at 96) of $36,225,000 of 7 per cent equipment trust certificates dated April 15, 1920, maturing annually in equal amounts over a period of fifteen years, issued under the New York Central Railroad Company Equipment Trust of 1920, established by agreement dated April 15, 1920. The remaining 25 per cent (approximately) of such cost was borrowed in December from the United States under the provisions of the Transportation Act, as hereinafter set forth. Of this 1920 trust equipment, this company took for itself 95 locomotives, 160 passenger cars and 4,194 freight cars, of an estimated cost of $23,072,084.89. The balance thereof it sublet to its affiliated companies as follows:

	Locomotives	Passenger cars	Freight cars	Estimated cost
C., C., C. & St. L. Ry Co..	70	55	3,100	$15,227,995.43
M. C. R. R. Co	26	38	1,950	9,356,838.80
P. & L. E. R. R. Co	5	11	....	637,366.68
T. & O. C. Ry. Co	..	1	....	24,014.20
Totals	101	105	5,050	$25,246,215.11

The sub-leases provide that each of the sub-lessees shall assume its pro rata share of the equipment trust certificates, principal and interest, and expenses of the trust and shall pay that part of the cost of the sublet equipment which is not financed through the trust, and that it shall upon the fulfillment of the trust become the owner of the equipment sublet to it.

On December 23, 1920, the company borrowed $26,775,000 from the fund provided by Section 210 of the Transportation Act by two loans, for $14,850,000 and $11,925,000, respectively.

The $14,850,000 loan:

The company is using the proceeds of this loan for the following purposes:

1. For its proportion of the 25 per cent initial cash payment under the 1920 trust	$4,490,000
2. For additions and betterments to its existing equipment	2,486,000
3. Loan to the Cleveland, Cincinnati, Chicago & St. Louis Railway Company to enable that company to meet its proportion of the 25 per cent initial cash payment under the 1920 trust assumed by it under a sub-lease and for additions and betterments to that company's existing equipment	3,944,000
4. Loan to the Michigan Central Railroad Company to enable that company to meet its proportion of the 25 per cent initial cash payment under the 1920 trust assumed by it under a sub-lease and for additions and betterments to that company's existing equipment	3,930,000
	$14,850,000

This company received from the Cleveland, Cincinnati, Chicago & St. Louis Railway Company and from the Michigan Central Railroad Company, respectively, their 6 per cent notes dated December 23, 1920, for the

amounts lent to them as above stated, divided into fifteen notes of each company, maturing in equal installments December 23, 1921-35.

For this loan of $14,850,000 this company gave to the Government its fifteen notes dated December 23, 1920, for $994,000 each, maturing serially December 23, 1921-35, secured by the pledge of the notes of the Cleveland, Cincinnati, Chicago & St. Louis Railway Company and the Michigan Central Railroad Company, guaranteed by this company; $994,000 of this company's 6 per cent refunding and improvement mortgage bonds, series B, issued for the purpose of such pledge; $6,420,000 of 6 per cent deferred equipment trust certificates dated December 23, 1920, maturing in equal installments December 23, 1921-35 (issued under agreement dated December 15, 1920, supplemental to the original 1920 equipment trust agreement heretofore mentioned); $1,000,000 of 4 per cent general mortgage bonds of the Cleveland, Cincinnati, Chicago & St. Louis Railway Company and the 7 per cent demand note of the last mentioned company, for $4,000,000, guaranteed by this company, which note is in turn secured by the pledge of $4,189,000 of that company's 6 per cent refunding and improvement mortgage bonds, series A.

The $11,925,000 loan:

The company is using the proceeds of this loan for the following purposes:

1.	For additions and betterments to its way and structures		$5,500,000
2.	Loan to the Cleveland, Cincinnati, Chicago & St. Louis Railway Company for additions and betterments to way and structures	$4,560,000	
3.	Loan to the Cleveland, Cincinnati, Chicago & St. Louis Railway Company, which, in turn, made a loan for the same amount to the Cincinnati Northern Railroad Company to provide for additions and betterments to way and structures and equipment of that company	113,000	4,673,000
4.	Loan to the Michigan Central Railroad Company for additions and betterments to way and structures		613,000
5.	Loan to the Toledo & Ohio Central Railway Company for additions and betterments to way and structures		214,000
6.	Loan to the Zanesville & Western Railway Company for additions and betterments to way and structures		60,000
7.	Loan to the Kanawha & Michigan Railway Company for additions and betterments to way and structures and equipment		256,000
8.	Loan to the Lake Erie & Western Railroad Company for additions and betterments to way and structures and equipment		609,000
			$11,925,000

This company received from the Cleveland, Cincinnati, Chicago & St. Louis Railway Company, the Michigan Central Railroad Company, the Toledo & Ohio Central Railway Company, the Zanesville & Western Railway Company, the Kanawha & Michigan Railway Company and the Lake Erie & Western Railroad Company, respectively, their 6 per cent ten-year notes dated December 23, 1920, for the amounts lent to them as above stated, the note of the Cleveland, Cincinnati, Chicago & St. Louis Railway Company for $4,560,000 being secured by the pledge of a like amount of that company's 6 per cent refunding and improvement mortgage bonds, series B, the note of that company for $113,000 being secured by the pledge of the 6 per cent ten-year note, dated December 23, 1920, of the Cincinnati Northern Railroad Company for a like amount, guaranteed by the Cleveland, Cincinnati, Chicago & St. Louis Railway Company, and the note of the Michigan Central Railroad Company being secured by the pledge of $507,000, principal amount, of that company's 6 per cent refunding and improvement mortgage bonds, series B.

For this loan of $11,925,000, this company gave to the Government its 6 per cent ten-year note dated December 23, 1920, secured by pledge of (1) the above notes of the Cleveland, Cincinnati, Chicago & St. Louis Railway Company, the Michigan Central Railroad Company, the Toledo & Ohio Central Railway Company, the Zanesville & Western Railway Company, the Kanawha & Michigan Railway Company and the Lake Erie & Western Railroad Company, guaranteed by this company, several of the said pledged notes being, in turn, secured by the pledge of bonds or other collaterals as above shown; and (2) by $5,500,000 of this company's 6 per cent refunding and improvement mortgage bonds, series B, issued for the purpose of such pledge.

In addition to the funded debt outstanding, there were nominally issued during the year and pledged as collateral, as more fully set forth elsewhere, $31,494,000 of New York Central Railroad Company refunding and improvement mortgage 6 per cent bonds, series B, and $6,420,000 of New York Central Railroad Company Supplemental Equipment Trust of 1920 deferred 6 per cent equipment trust gold certificates.

Upon the payment in full at maturity of $15,000,000 one-year notes, the $20,000,000 of New York Central Railroad Company refunding and improvement 4½ per cent bonds, series A, which were pledged in 1919 as part security for said notes, were returned to the treasury of the company and, upon resolution of the Board of Directors, cancelled.

The changes in the funded debt of the company are shown in the following statement:

Amount as reported on December 31, 1919, was		$671,654,782.46
which has been increased as follows:		
N. Y. C. R. R. Co. ten-year 7% Collateral trust gold bonds	$25,000,000.00	
N. Y. C. R. R. Co. Equipment Trust 6% notes of January 15, 1920, given to the Director General of Railroads	13,674,000.00	
N. Y. C. R. R. Co. Equipment Trust of April 15, 1920, 7% certificates $36,225,000.00		
Proportion allocated to other N. Y. C. Lines 18,927,490.05	17,297,509.95	
Ten-year 6% promissory note given to the Secretary of the Treasury of the United States, dated December 23, 1920	11,925,000.00	
Fifteen 6% promissory notes maturing serially at yearly intervals given to the Secretary of the Treasury of the United States, dated December 23, 1920	14,850,000.00	82,746,509.95
		$754,401,292.41
and has been reduced as follows:		
Three-year mortgage favor East Cambridge Land Company, matured and paid off	$100,000.00	
Payments falling due during the year and on January 1, 1921, on the company's liability for certificates issued under equipment trust agreements as follows:		
N. Y. C. Lines Trust of 1907, installment due November, 1920	1,492,884.74	
N. Y. C. Lines Trust of 1910, installment due January, 1921	1,406,413.74	
N. Y. C. Lines Trust of 1912, installment due January, 1921	688,398.90	
Boston & Albany Trust of 1912, installment due October, 1920	500,000.00	
N. Y. C. Lines Trust of 1913, installment due January, 1921	742,117.61	
N. Y. C. R. R. Co. Trust of 1917, installment due January, 1921	1,117,000.00	6,046,814.99
leaving the funded debt on December 31, 1920		$748,354,477.42

In addition to the funded debt outstanding on December 31, 1920, the following loans and bills payable appear on the balance sheet:

War Finance Corporation	$17,500,000.00
Secretary of the Treasury	6,500,000.00
Director General of Railroads	7,000,000.00
Banks, trust companies and miscellaneous	2,432,866.68
Total	$33,432,866.68

On October 25, 1920, the company gave its 6 per cent demand note for $7,000,000 to the Director General of Railroads to be applied upon the company's indebtedness to the United States for additions and betterments made during federal control. It was agreed that the note should be secured by the pledge of $7,000,000, principal amount, of the company's refunding and improvement mortgage bonds, series B, to be issued, when authorized by the Interstate Commerce Commission, against additions and betterments made during federal control. Aside from the above the loans and bills payable are renewals or extensions of those shown in the stockholders' report for 1919.

During the year the company acquired 193 shares, par value $9,650, of the common stock of the Pittsburgh McKeesport & Youghiogheny Railroad Company. Its total holdings in this stock at the close of 1920 were 31,337 shares, par value $1,566,850, or 39 per cent of the amount outstanding. The Pittsburgh & Lake Erie Railroad Company owns a like amount of this stock.

The capital stock of the Detroit, Toledo & Milwaukee Railroad Company is owned jointly and equally by the New York Central Railroad Company and the Michigan Central Railroad Company. The road of the Detroit Toledo & Milwaukee Railroad Company originally extended from Dundee, Michigan, to Allegan, Michigan, a distance of 133.14 miles, and under an agreement dated January 1, 1905, provision was made for the operation of the section between Homer and Allegan by the Michigan Central Railroad Company and between Homer and Dundee by the Lake Shore & Michigan Southern Railway Company. In 1913, a section of this line between Allegan and Battle Creek, 39 miles, was sold to a traction company, and the remaining mileage of the road was redivided for operation between the Lake Shore & Michigan Southern Railway Company and the Michigan Central Railroad Company, so that the portion assigned to the Lake Shore & Michigan Southern Railway Company was 46.98 miles between Dundee and Moscow and the portion assigned to the Michigan Central Railroad Company was the line between Moscow and Battle Creek, a distance of 47.15 miles. As the original agreement of January 1, 1905, had not been modified, the New York Central Railroad Company and the Michigan Central Railroad Company executed during the year an agreement with the Detroit, Toledo & Milwaukee Railroad Company, effective September 1, 1913, for the operation of the road based on the new division of mileage.

A controversy of long standing with the Western Union Telegraph Company in connection with wire mileage allowances was satisfactorily settled during the year.

In the operation of the Pension Department 255 employees were retired and placed upon the pension rolls. Of these retirements, 161 were authorized because of the attainment of seventy years of age and 94 because of permanent physical disability. The number of pensioners who died during 1920 was 187. The number of retired employees upon the pension rolls at the close of the year was 1,776. The average monthly pension allowance of these is $29.61. The total amount paid in pensions during the year was $615,020.52.

On July 28, 1920, the Board of Directors authorized the execution of a uniform contract for express operations over rail lines with the American Railway Express Company subject to the approval and authorization pursuant to law by order of the Interstate Commerce Commission. The contract was duly executed in behalf of this company, and the approval of the Interstate Commerce Commission having been duly given, it became effective on September 1, 1920. The contract is in the nature of an experiment, being the outgrowth of the merger of the express companies and other conditions created during federal control. It is for a term of five years and thereafter until the expiration of four months' notice by either party, but may be terminated by this company, on six months' notice, on February 28, 1923, or, under certain conditions, on that date by the express company.

In order to preserve continuity of comparisons, operating revenues, operating expenses and other statistics have been separately shown in detail elsewhere in this report for the full calendar year 1920 regardless of federal control, guaranty period or corporate operation.

The income to the corporation, arrived at by the addition of compensation received under federal control, the guaranteed net railway operating income under Section 209 of the Transportation Act of 1920, and the net railway operating income for the four months September to December, 1920, inclusive, was less by $8,246,181.33 than that received as compensation from the United States Government during the federal control year 1919. The results for the four months of operation since August 31 have not indicated pro rata the return provided for under the Transportation Act and contemplated in the rate increases granted by the Interstate Commerce Commission.

During 1920 the results of operation of the stockyards at East Buffalo were included in miscellaneous operations while in 1919 they were included in the operating revenue and expense accounts. This is the principal cause of the increase shown in miscellaneous operations.

The decrease in income from lease of road, the increase in income from separately operated properties-profit, the increase in miscellaneous rent deductions, and the decrease in miscellaneous tax accruals are chiefly due to adjustments of accruals, etc., in the accounts and not to greater or smaller income.

Miscellaneous rent income shows an increase of $263,785.13, mainly due to additional amount accrued during the year on land leased.

Revenue from miscellaneous non-operating physical property decreased $81,809.33. This is a net account and the decrease is mainly due to the inclusion in 1920 of accumulated charges for expense of operating and maintaining corporate offices in the Mail Service and Office Building for the years 1918 and 1919 as well as those for 1920.

The increase in dividend income of $636,548.38 is principally accounted for by extra dividends declared during the year by the Mahoning Coal Railroad Company and by the Merchants Despatch Transportation Company.

SUMMARY OF FINANCIAL OPERATIONS AFFECTING INCOME

	Year ended Dec. 31, 1920	Year ended Dec. 31, 1919	Increase or decrease
Compensation accrued for the possession, use and control of the property of this company and its leased lines, as stated in contract with the Director General of Railroads—January 1 to February 29, inclusive	$9,300,438.42	.....	.....
Additional compensation accrued account completed additions and betterments—January 1 to February 29, inclusive	237,569.11	.....	.....
Guaranteed net railway operating income under section 209 of Transportation Act of 1920—March 1 to August 31, inclusive $28,699,177.36 *Less* operating income items audited March 1 to August 31, inclusive, applicable to the period prior to January 1, 1918 330,721.10	28,368,456.26	.....	.....
Net railway operating income—corporate account—September 1 to December 31, inclusive	11,537,942.97	.....	.....
TOTAL (compared with compensation accrued in 1919 under contract with Director General of Railroads)	$49,444,406.76	$57,690,588.09	—$8,246,181.33
MISCELLANEOUS OPERATIONS			
Revenues	$473,803.22	$2,825.69	$470,977.53
Expenses and taxes	268,274.15	4,275.34	263,998.81
NET INCOME	$205,529.07	$1,449.65*	$206,978.72
OTHER INCOME			
Income from lease of road	$84,612.05	$103,725.39	—$19,113.34
Miscellaneous rent income	1,309,827.75	1,046,042.62	263,785.13
Miscellaneous non-operating physical property	501,876.69	583,686.02	—81,809.33
Separately operated properties profit	1,032,775.29	871,601.52	161,173.77
Dividend income	6,655,251.13	6,018,702.75	636,548.38
Income from funded securities	1,009,042.39	859,863.25	149,179.14
Income from unfunded securities and accounts	4,734,223.16	4,039,728.66	694,494.50
Income from sinking and other reserve funds	60,037.34	45,880.52	14,156.82
Miscellaneous income	72,156.93	50,135.47	22,021.46
TOTAL OTHER INCOME	$15,459,802.73	$13,619,366.20	$1,840,436.53
GROSS INCOME	$65,109,738.56	$71,308,504.64	—$6,198,766.08
DEDUCTIONS FROM GROSS INCOME			
Rent for leased roads	$10,366,097.64	$9,288,648.35	$1,077,449.29
Miscellaneous rents	739,238.35	675,986.84	63,251.51
War taxes accrued	1,173,749.36	1,830,550.40	—656,801.04
Miscellaneous tax accruals	170,320.54	193,678.10	—23,357.56
Separately operated properties—loss	149,274.42	82,015.95	67,258.47
Interest on funded debt	30,736,911.26	29,227,222.10	1,077,449.29
Interest on unfunded debt	5,889,446.74	5,100,843.42	788,603.32
Amortization of discount on funded debt	440,032.96	552,076.06	—112,043.10
Maintenance of investment organization	3,499.72	4,772.88	—1,273.16
Miscellaneous income charges	318,660.15	323,290.21	—4,630.06
Corporate general expenses	276,587.51	915,800.46	—639,212.95
TOTAL DEDUCTIONS FROM GROSS INCOME	$50,263,818.65	$48,194,884.77	$2,068,933.88
	$14,845,919.91	$23,113,619.87	—$8,267,699.96
Less revenues and expenses applicable to period prior to January 1, 1918, settled for account of the corporation by the United States Railroad Administration	1,111,231.95	3,196,369.22	—2,085,137.27
NET CORPORATE INCOME	$13,734,687.96	$19,917,250.65	—$6,182,562.69
DISPOSITION OF NET INCOME			
Dividends declared (5 per cent each year)	$12,479,614.76	$12,479,611.25	$3.51
Sinking funds	4,816.87	4,576.56	240.31
TOTAL APPROPRIATIONS OF INCOME	$12,484,431.63	$12,484,187.81	$243.82
SURPLUS FOR THE YEAR CARRIED TO PROFIT AND LOSS	$1,250,256.33	$7,433,062.84	—$6,182,806.51

*Net deficit.

Profit and Loss Account

BALANCE TO CREDIT OF PROFIT AND LOSS, DECEMBER 31, 1919.		$87,623,144.87
ADDITIONS:		
Surplus for the year 1920	$1,250,256.33	
From United States Government in adjustment of mail pay for years 1916-1917	1,646,161.61	
Profit on road and equipment sold	21,899.69	
		2,918,317.63
		$90,541,462.50
DEDUCTIONS:		
Surplus appropriated for investment in physical property	$23,096.20	
Depreciation prior to July 1, 1907, on equipment retired during year	502,362.54	
Loss on retired road and equipment	29,121.90	
Sundry adjustments (net) and uncollectible accounts	53,326.52	
		607,907.16
BALANCE TO CREDIT OF PROFIT AND LOSS, DECEMBER 31, 1920		$89,933,555.34

Income from funded securities increased $149,179.14, this being attributable to interest received on old first mortgage bonds of the Kanawha & Hocking Coal and Coke Company, and accrued interest on first mortgage sinking fund bonds of that company received during the year in exchange for the old bonds in connection with a general settlement with the coal and coke company.

The increase of $694,494.50 in the income from unfunded securities and accounts is largely due to interest received from temporary investment in United States Treasury Certificates and other securities, of cash from the sale of equipment trust certificates of April 15, 1920, until such time as the funds were required to pay for new equipment.

The increase of $22,021.46 in miscellaneous income largely represents profit resulting from the purchase of foreign exchange for payment of dividends.

Rent for leased roads increased $1,077,449.29. This is almost entirely caused by larger payments to the Mahoning Coal Railroad Company since February 29, 1920. During federal control the company paid, under agreement with the Mahoning Coal Railroad Company, a rental based on 40 per cent of the average annual earnings during the test period, while, since the termination of federal control, the payments have been on the basis of 40 per cent of the actual gross earnings.

The decrease of $656,801.04 in war taxes is the result of a change in method of accounting since August 31, 1920, war taxes for the last four months of the year having been included in railway tax accruals.

Largely contributing to the increase of $67,258.47 in charges for loss in connection with separately operated properties is this company's proportion of an increased deficit from operation of the Indiana Harbor Belt Railroad.

The increase of $1,509,689.16 in interest on funded debt is due to the increase of such debt as noted elsewhere, while the increase in interest on unfunded debt is mainly in that accrued on deferred payments on additions and betterments to road and equipmnnt and on other accounts due the United States Government, this more than offsetting the saving in interest due to the reduction in the short term debt of the company.

The corporate general expenses shown for 1920 represent only those for the months of January and February during which the property was under federal control, expenditures of this character for the remainder of the year being included in operating expenses. This accounts for the decrease of $639,212.95 as shown.

The net corporate income for the year was $13,734,687.96, a decrease of $6,182,562.69 as compared with 1919. After payment of the dividends of 5 per cent and sinking fund deductions of $4,816.87, there remained for the year a surplus to be carried to profit and loss of $1,250,256.33.

Expenditures during the year for improvements on property were as follows:

Improvements on owned property used in operation	$3,776,663.77
Equipment purchased and acquired less equipment retired and transferred	3,349,574.02
Improvements on leased property	2,159,424.07
Improvements on miscellaneous physical property	2,136,678.33
The net increase in property investments during the year 1920 was	$11,422,340.19

The cost of the equipment allotted to the New York Central Railroad Company during federal control by the Director General of Railroads and covered by equipment trust agreement dated January 15, 1920, was included in the detailed lists of expenditures for improvements to property contained in the annual reports for the years 1918 and 1919. About one-third of the equipment covered by the New York Central Railroad Company's Equipment Trust established by agreement dated April 15, 1920, was delivered in 1920 and its cost appears in the detailed tabulations in this report. The cost of the remainder of this equipment, which it is expected will be delivered in 1921, will appear in the report for that year.

This company owns 67 per cent of the capital stock of the New York and Harlem Railroad Company and operates its steam line under lease. The traction lines of the New York and Harlem Railroad Company were operated by the Metropolitan Street Railway Company under a 999 year lease dated June 11, 1896, and following reorganization of the lessee, were operated by the New York Railways Company, as successor, subsequent to January 1, 1912, and by Job E. Hedges, Receiver of the New York Railways Company, after March 20, 1919, until midnight of January 31, 1920, when, by order of the United States District Court, the lines were returned to the New York and Harlem Railroad Company and have since been operated by that company.

On July 22, 1920, in Paris, France, occurred the death of William K. Vanderbilt, concerning whose character and service with this company an appropriate minute will be found on another page of this report.

The Board also records with deep regret the death of Dwight W. Pardee, Secretary of this company, at his home in Islip, Long Island, on February 21, 1920, after forty-four years of service with the New York Central Lines.

Edward F. Stephenson was appointed Secretary, effective February 24, 1920.

On January 28, 1920, Messrs. Albert H. Harris and Bertram Cutler were elected directors of this company.

Appreciative acknowledgment is made to all officers and employees of their loyal and efficient co-operation and service.

For the Board of Directors,

ALFRED H. SMITH,
President.

[ADVERTISEMENT]

Railway Officers

Executive

D. M. Swobe has been elected president and traffic manager of the McCloud River with headquarters at San Francisco, succeeding J. H. Queal, deceased.

Charles S. Lake has been appointed assistant to the president of the Chesapeake & Ohio and the Hocking Valley, with headquarters at Richmond, Va., effective June 1. Mr. Lake was born on May 27, 1871, at Front Royal, Va., and received his education at private schools and at the Front Royal Academy. He entered railway service in May, 1885, as a telegraph operator with the Richmond & Allegheny (now a part of the Chesapeake & Ohio) and subsequently served that road and the Norfolk & Western in yard and train service. In September, 1888, he became a dispatcher for the Norfolk & Western and from 1890 to 1897 served in the same capacity on the Chesapeake & Ohio. In January, 1897, he returned to the Norfolk & Western and until 1902 served in turn as night chief dispatcher, general yardmaster and assistant trainmaster at Roanoke, Va., and Bluefield, W. Va. For five years he served as trainmaster and superintendent of the Danville and Washington division of the Southern. He then became superintendent of the New York, New Haven & Hartford, first at Hartford and then at Waterbury, Conn., and served in that capacity until 1912, when he was appointed general superintendent of the Minneapolis & St. Louis. From May, 1914, to June, 1917, he served as general manager of the Seaboard Air Line and left to perform special service for the president of the Erie, where he remained until the period of federal control, during which he served as assistant director, division of operation, and assistant to the director general of railroads. At the expiration of federal control he remained until August, 1920, with the United States Railroad Administration, when he became general manager of the Norfolk-Southern, in which capacity he was serving at the time of his recent appointment.

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Chas. S. Lake

Operating

J. A. Davis, district superintendent of the Pullman Company, with headquarters at San Antonio, Tex., has been transferred to Louisville, Ky., and has been succeeded by **T. J. Eddings,** who has been district superintendent at Mexico City, Mex.

R. G. Fagan has been appointed superintendent of freight protection of the Southern Pacific with headquarters at San Francisco, effective July 1. The work of preventing loss of and damage to freight shipments has been assumed by the operating department.

J. H. Walsh, assistant superintendent of the Southern Pacific, with headquarters at San Antonio, Tex., has been promoted to superintendent of the Austin division, with headquarters at Austin, Tex., succeeding **T. T. Player,** who resigned recently. **C. H. Maguire,** trainmaster of the Austin division, with headquarters at Austin, Tex., has been promoted to assistant superintendent, with headquarters at Houston, Tex., succeeding **A. L. Kuykendall,** who was killed recently in a motor car accident at Houston. **H. F. Kelly,** chief clerk to the division superintendent, with headquarters at San Antonio, Tex., succeeds Mr. Maguire.

W. J. Edwards, whose appointment as general superintendent of the Southern with headquarters at Chattanooga, Tenn., was announced in the *Railway Age* of June 10 (page 1378), was born at De Kalb, Kemper county, Miss., in 1866. He entered railway service at the age of 16 as a track laborer with the Mobile & Ohio and was later promoted to track foreman. Mr. Edward then entered train service as a brakeman and subsequently served as freight and passenger conductor, and roadmaster. In 1914, he was appointed division superintendent at Birmingham, Ala., which position he held at the time of his recent appointment. Mr. Edwards has served continuously with the Mobile & Ohio and the Southern for 39 years, with the exception of one year, when he was in the service of the St. Louis Iron Mountain & Southern as division engineer.

James H. Aydelott, whose promotion to superintendent of transportation of the Chicago, Burlington & Quincy, with headquarters at Chicago, was announced in the *Railway Age* of July 2 (page 50), was born in Jersey County, Ill., in 1883. Mr. Aydelott entered railway service as a stenographer and clerk in the mechanical department of the Chicago, Burlington & Quincy at St. Joseph, Mo., in September, 1902. Six years later he was promoted to chief clerk to the division superintendent at St. Joseph. After three years' service in that position, he became chief clerk to the general superintendent, with headquarters at St. Louis, Mo., and one year later was transferred to Chicago as chief clerk to the assistant general manager. In 1916 he was promoted to trainmaster, with headquarters at La Crosse, Wis., and after one year's service at that location he was promoted to superintendent, with headquarters at Hannibal, Mo. During the next three years, Mr. Aydelott served as superintendent at Hannibal, at Omaha, Neb., and at Casper, Wyo., and in August, 1920, was advanced to assistant superintendent of transportation, with headquarters at Chicago, the position he occupied at the time of his recent promotion.

Traffic

L. R. Capron has been appointed assistant freight traffic manager of the Northern Pacific, with headquarters at St. Paul, Minn., effective July 1.

F. C. Jerome has been appointed general eastern freight agent of the New York Central with headquarters at New York, succeeding L. M. Souders, resigned.

A. C. Irons, general passenger agent of the Chicago Great Western, with headquarters at Chicago, has resigned to become associated with the D. H. Howland Sugar Company of Detroit, Mich.

F. M. Hicks, comptroller of the Gulf, Mobile & Northern, with headquarters at Mobile, Ala., has been appointed traffic manager, succeeding **T. D. Geohegan,** whose resignation was noted in the *Railway Age* of July 8 (page 941). **L. C. Hollingsworth,** auditor of receipts, with headquarters at Mobile, Ala., has been appointed assistant general freight and passenger agent, with the same headquarters, effective July 2. **J. S. Gibson,** succeeds Mr. Hollingsworth.

Mechanical

D. D. Briggs has been appointed master mechanic in full charge of the mechanical department of the Alabama, Tennessee & Northern with headquarters at Mobile, Ala., effective July 1.

Obituary

Dr. Norman H. Morrison, for 30 years chief surgeon of the Atchison, Topeka & Santa Fe Coast lines, died at his home in Los Angeles, Cal., on July 3, after an operation. Mr. Morrison was 68 years old.